OCCASIONAL PAPER 80

SMALL-SCALE INDUSTRY IN THE SOVIET UNION

ADAM KAUFMAN

NATIONAL BUREAU OF ECONOMIC RESEARCH

1962

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PRICE: $2.00

Printed in the United States of America

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This study, one of a series dealing with Soviet economic growth, was made possible by funds granted by the Rockefeller Foundation. The Rockefeller Foundation is, however, not to be understood as approving or disapproving by virtue of its grant any of the statements made or views expressed herein.

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Acknowledgments

This paper owes much to the advice and suggestions of G. Warren Nutter, to the efforts of Marie-Christine Culbert who showed great patience in editing it, to Julia Kamermacher who checked the data, and to Irving Forman who drew the charts. I am also indebted to Moses Abramovitz, V. W. Bladen, Solomon Fabricant, Raymond W. Goldsmith, Gabriel Hauge, and George Soule for their careful reading of the manuscript and their useful comments.

A. K.

Foreword

Industry is essentially the domain of the factory, but its always vague boundaries extend beyond in varying degrees, depending on time and country. These boundaries are, of course, particularly uncertain in the early stages of industrialization, when workshops are being transformed into factories and many other attendant structural changes are being diffused throughout an economy. To assess a country's industrial growth correctly, one needs to know the course of developments in workshops as well as factories.

This is seldom easy, for the statistical record of small-scale industry is typically poor, all the more so for the times when it is most important. Indeed, much of what appears to be growth in the early stages of industrialization is often a statistical mirage: as productive activity is transferred from many scattered shops to a single large establishment, accounts become easier to keep as well as more essential, and formerly unrecorded output suddenly enters statistical annals. In the Soviet case this illusion of growth has been magnified by the official policy, only recently modified, of publishing only large-scale output for those years in which the small-scale sector was rapidly being absorbed. Trends in small-scale production were kept largely out of sight, even though much was known about them through periodic censuses.

It became apparent early in the course of our studies that the picture of Soviet industrial growth had been seriously distorted by this policy. As we searched for the concealed information, we also became aware of the larger need for a systematic historical account of developments in Russian small-scale industry. None was to be found in either Russian or Western literature.

Adam Kaufman has now admirably filled this gap in knowledge with the report given here, which falls in the series setting forth results of the National Bureau's study of Soviet economic growth begun in 1954 under a grant from the Rockefeller Foundation. To be sure, some important details, such as the physical output of some individual small-scale industries, have had to be estimated indirectly, since they remain buried in Soviet archives. But Kaufman's account conveys as much reliable and useful information, in a systematically ordered form, as one would normally demand of a history of such times. Being based ultimately on Soviet statistics compiled in the early Soviet period, his account suffers of course from the shortcomings in data already described in Grossman's and my own earlier reports in this series.

The trend of developments emerges clearly. The share of full-time employment accounted for by small-scale industry within interwar Soviet boundaries fell from about a half in the years immediately before the revolution to about a fourteenth at the end of the First Five Year Plan; the share of gross value of output, from about a third to a twelfth. Small-scale production of industrial materials declined by around 70 per cent between 1913 and 1933, while large-scale production rose by around 80 per cent. The displacement of small-scale production was in part illusory, resulting from changes in the definition of large-scale production that led to incorporation in that sphere of what was formerly treated as small-scale production. But it was largely real. In any case, more than two-fifths of the percentage growth attributable to large-scale production over this period can be traced to the release of resources from the shrinking small-scale sector. The increase in production of industrial materials was less than 40 per cent for all industry, compared with more than 80 per cent for large-scale industry. We hardly need comment further on how misleading it can be to assess Soviet industrial growth on the basis of trends in large-scale production alone.

Kaufman's report is, of course, of much broader interest than this narrow application of his findings suggests. It is in effect a case study of major structural changes undergone by an economy in the process of rapid industrialization. As such, it helps us to understand and anticipate the problems that may be encountered by so-called underdeveloped economies in the course of industrialization, particularly by those choosing the Soviet path.

The mark of a definitive study is that the ground covered need not be gone over again, except to glean overlooked bits. This work by Adam Kaufman bears, we believe, that mark.

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Economic Growth

Charlottesville, Virginia

CHAPTER 1

Historical Sketch of the Role of Small-Scale Industry

As in any underdeveloped country, small-scale, handicraft, and artisan industry played an important role in the prerevolutionary Russian economy. The rapid industrialization that had occurred in Russia in the four decades preceding the revolution was extremely uneven. Mechanized factory production had become predominant in the industries producing capital goods and semifabricates, but almost all consumer goods (the cotton goods industry being the most important exception) were still produced by the dispersed, technologically primitive small-scale industry.

Many factors contributed to this uneven development of the Russian economy: a political order that did not favor industrialization; the agrarian character of the country; the sparse urban population coupled with a significant "surplus" rural population; the absence of a good highway network; the long Russian winter, which permitted peasants to develop additional "industrial" trades; and above all the slow process of capital formation, the "hunger" for capital, that put a brake on industrial development. These factors all favored the development of small-scale industry, in the form of rural handicraftsmen (*kustari*) and artisans (*remeslenniki*).[1] The scarcity of entrepreneurial capital and, as a corollary, the almost inexhaustible reserve of idle labor—a phenomenon familiar to all underdeveloped countries—were particularly important in a vast country like Russia.

The relatively primitive *kustar'* industry became a partial outlet for the "surplus" agrarian population. It produced cheap, coarse consumer goods, catering to the needs and tastes of the Russian peasants, whose incomes did not permit them to buy the more expensive factory-produced goods. In general, most of the Russian population depended for its personal consumption much more on the produce of small-scale industry than on factory production. With the exception of cotton textiles, kerosene, salt, tobacco, and a few producer goods, the Russian village with its local *kustar'* industry was almost self-sufficient.

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[1] The distinction between *kustari* and *remeslenniki* is vague. Usually *kustari* were handicraftsmen in rural communities who combined agricultural activities with handicrafts.

Despite its low technological level, the production of small-scale industry encompassed a significant segment of the total Russian industrial output in the prerevolutionary period, especially in consumer goods industries. Within the interwar Soviet territory, small-scale industry accounted for almost 63 per cent of total industrial employment in 1913, or for 51 per cent in full-time equivalents.[2] It accounted for 34 per cent of the total gross value of industrial output.[3] The revolution did not diminish the importance of small-scale industry. On the contrary, during the period of War Communism and in the initial years of the New Economic Policy (NEP), the relative share of small-scale industry increased. Lack of fuel and disorganization of transport affected large-scale industry more adversely than small-scale industry. As a result of the revolution, factory production became even more geographically concentrated than it had been before the revolution, which, given the difficulties of transport, gave an advantage to local small-scale industry. The secession of the Polish and Baltic provinces, with their developed "light" industries, still further diminished the Russian capacity for factory production of consumer goods. But the most important factors were the profound changes that took place in the countryside. The redistribution of land led to a rise in agricultural production, and this created a rapidly increasing demand by the peasantry for consumer goods. Small-scale industry started to compete, and quite successfully, with state-operated and state-controlled industry, which at this time was plagued by steadily increasing production costs. As early as 1926/27 voices of alarm were raised in the Soviet press over the danger of "private capital" and small-scale industry.[4]

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[2] See Tables A-1 and A-2. Employment is measured in persons engaged, including wage earners, salaried personnel, and the self-employed. Industry is defined as manufacturing, mining, logging, fishing, and the generating of electricity, with repair shops excluded.

[3] See Table A-3.

[4] See, for instance, an article by Iu. Larin, "Chastnyi kapital v promyshlennosti" [Private Capital in Industry], *Ekonomicheskoe obozrenie* [Economic Survey], 1927, No. 7.

Prohibitive taxes and repressive administrative measures were applied in order to hinder the development of small-scale industry, measures especially severe on industries processing scarce raw materials, such as wool, leather, and flax. Despite the decline of some specific *kustar'* industries, small-scale industry as a whole still occupied an important place in the economy on the eve of the Plan era. In 1927/28, it accounted for 45 per cent of total industrial employment in full-time equivalents, and for 29 per cent of the total gross value of industrial output.[5]

The introduction of an over-all national plan in 1929 undermined the existence of privately owned, independent small-scale industry. As a result of the collectivization of agriculture, the "unorganized" *kustari* disappeared from the countryside, and attempts to build industrial *arteli* (producer cooperatives) on the collective farms were, as a rule, unsuccessful. In the cities, producer cooperatives were organized with limited success in certain branches of "light" industry. But, on the whole, small-scale industry declined. Its share in total full-time employment and gross value of output decreased rapidly, the former dropping to 7 per cent and the latter to 8 per cent by 1933.[6] The decline of small-scale industry between 1913 and 1933 is shown in Chart 1.

During the initial stage of the industrialization drive in the early Plan period, many schemes were worked out to subordinate small-scale industry to a unified, over-all, national economic plan. In the cities, prohibitive taxation and administrative coercion were used to induce the handicraftsmen to enter producer cooperatives. During the First Five Year Plan these "cooperatives" differed only in form from the state-operated factories. The abolition of private trade gave the state a monopoly both as the supplier of raw materials and semifabricates to the producer cooperatives and as the purchaser of their products. The inadequate supply of industrial raw materials—such as cotton, leather, and wool—undermined the work of the newly organized producer cooperatives, especially during the First Five Year Plan. In some cases, the Soviet authorities dealt with the situation by transforming the cooperatives using raw materials that were in short supply into state factories. Then they could either supply them with substitute raw materials or shift them to other production.

One interesting aspect of the partial absorption of small-scale industry into state industry was the statistical effect it had on the production index. Between 1928 and 1932, when the consumption level

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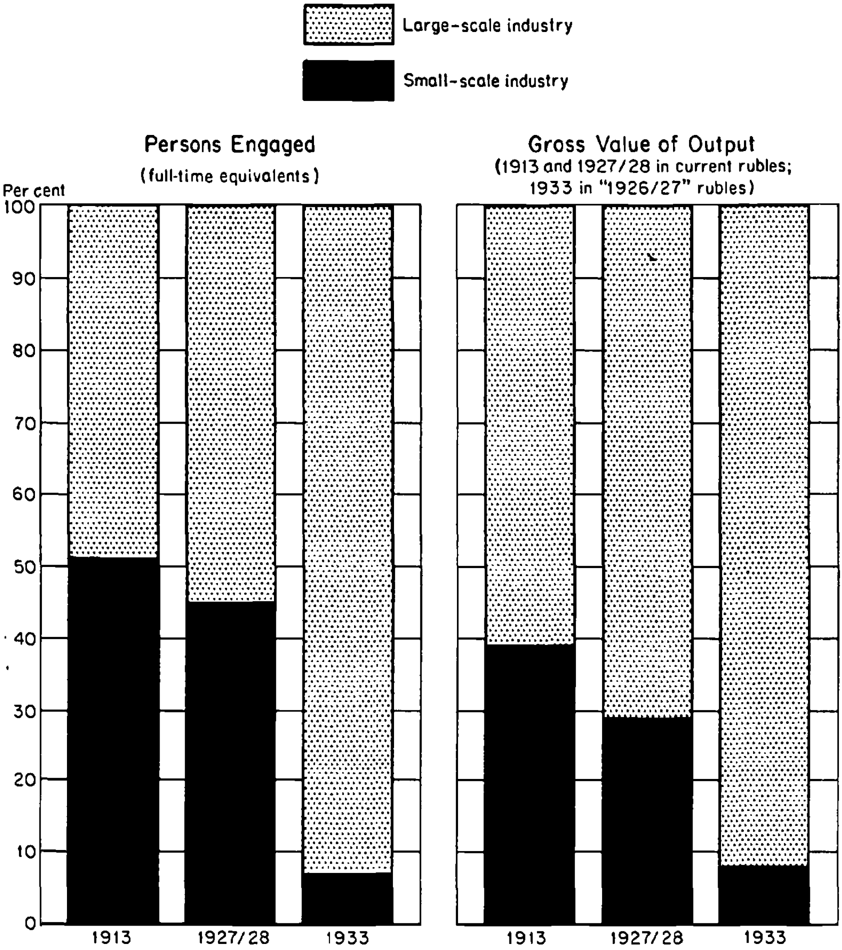
[5] See Tables A-2 and A-3.

[6] See Tables A-2 and A-3.

CHART 1

PERCENTAGE SHARES OF LARGE- AND SMALL-SCALE INDUSTRY IN EMPLOYMENT AND GROSS VALUE OF OUTPUT, 1913, 1927/28, AND 1933



SOURCE: Tables A-2 and A-3. Industry is defined as manufacturing, mining, logging, fishing, and generating of electricity, with repair shops excluded. All data apply to the interwar territory of the Soviet Union.

of the population fell significantly, the official production indexes showed an increase of 377 per cent for the garment industry, 225 per cent for knitted goods, and 217 per cent for leather shoes.[7] These increases simply reflect the enlarged coverage of accounting, for now statistical reporting embraced many thousand small enterprises, fused together as producer cooperatives, that previously had not been covered.

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[7] *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in USSR], Moscow, 1936, pp. 14 f.

In the countryside the decline of the *kustar'* industry was even greater. Some small-scale industries that satisfied the needs of farmers, such as flour mills and blacksmith shops, became the property of the collective farms. In regions where specialized *kustar'* trade had developed, the Soviet authorities endeavored to establish mixed collective farms that were both industrial and agricultural, the so-called *promkolkhozy*. But these institutional farms could not forestall the decline of small-scale industry. During the Second Five Year Plan the Soviet Union became the only country in the world where the small independent producer of goods and services represented an insignificant segment of the economy.[8]

It goes without saying that in many ways small-scale industry facilitated the industrialization drive in the early 1930's. Its means of production, although primitive and obsolete, increased the productive capacity of the state consumer goods industries. The many thousand *kustari* and artisans who became factory workers contributed to the formation of the industrial labor force. Regions where *kustar'* trades were concentrated became centers of similar factory production. No fewer than two million new, relatively skilled, industrial workers were drawn from the huge mass of *kustari* and artisans. No less significant was the incursion of state industry into different "home" industries of the Soviet peasant population. A large fraction of the output of prepared foods in the pre-Plan period was produced by peasant home industry. Churning of butter, making of cheese, pressing of vegetable oil,[9] and slaughtering of pigs were so closely associated with the peasant economy that they were considered part of agriculture in the broader meaning. This also applied to fishing, hunting, procuring of firewood, timber cutting, and primary processing of fibers, such as flax scutching, wool washing, and silk reeling. In the early 1930's these activities became exclusive monopolies of state industry, the work of

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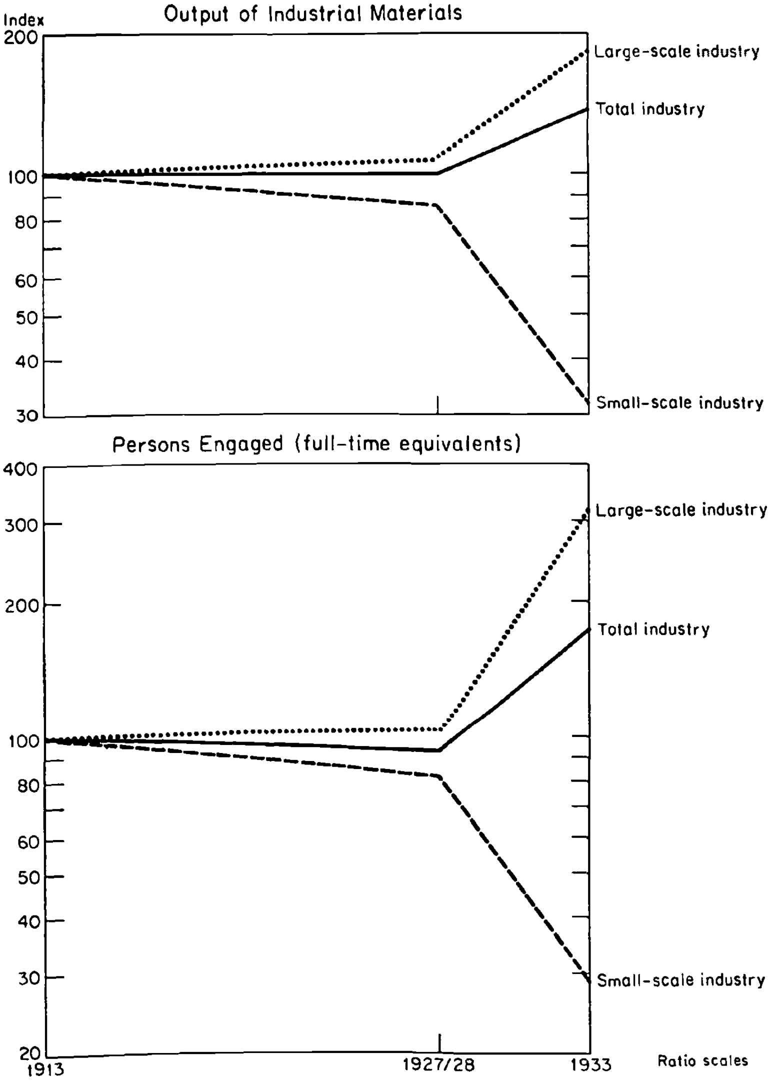
[8] China is a more recent example of a country that, by an act of administrative fiat, has put its "cottage" industry under direct state control. It is worth noting that the Eastern European centrally planned economies never went to such extremes. Since 1953 a reverse process has been evident in Poland, Hungary, and Rumania. Restrictions have been relaxed and small-scale, privately owned industry is showing signs of revival.

[9] Aside from the peasant, small-scale vegetable oil industry, some oil factories existed already before the revolution, but their share in output was relatively small.

CHART 2

INDEXES OF OUTPUT AND EMPLOYMENT: TOTAL, LARGE-SCALE, AND SMALL-SCALE INDUSTRY, 1913, 1927/28, AND 1933
(1913 = 100)



SOURCE: Table 18.

the collective farms being confined strictly to plant cultivation and animal husbandry. Statistically, this enlargement of the economic activity of state-operated industry had the same effect as the absorption of "light" industries, namely, many products and activities previously not covered by industrial statistics were now incorporated, thus giving the impression of growth in output.

The divergent trends of large- and small-scale industry during the first two five year plans are illustrated in Chart 2. Between 1913 and 1933, output of industrial materials grew by 83 per cent and employment by 181 per cent in large-scale industry. In the same period, output declined by 68 per cent and employment by 80 per cent in small-scale industry. From the data underlying these indexes (see Tables 17 and A-2), we find that 36 per cent of the percentage growth in output of the large-scale sector and 39 per cent in employment can be attributed to the absorption of the small-scale sector. That is to say, if output and employment of the small-scale sector had remained constant between 1913 and 1933 and total output and employment had grown as it did, output of the large-scale sector would have risen by only 64 per cent instead of by the recorded 83 per cent, and employment by only 110 per cent instead of 181 per cent.

The remaining chapters of this report will fill in the details for the developments briefly sketched so far. Before moving to the discussion of events, we consider first, in the next chapter, the nature of the data available on small-scale industry. We then proceed with a description of the role played by small-scale industry in prerevolutionary and early Soviet times and of its absorption in the Plan period. In the concluding chapter, we develop indexes to measure performance of small-scale and large-scale industry and briefly analyze the economic changes accompanying the shift from small- to large-scale production.

CHAPTER 2

The Nature of Statistics on Small-Scale Industry

Prerevolutionary Data

No official statistical investigations of small-scale industry were carried out in prerevolutionary Russia. The only official statistics available before 1914 are for the "census" industry,[1] i.e., industrial enterprises subject to factory inspection. At the stage of development of Russian industry in prerevolutionary times, only a relatively small part of industry met the high "census" requirements. The rest, small-scale industry, thereby became "noncensus" industry, a large heterogeneous agglomeration of industrial enterprises, some technologically advanced and responsible for a great part of the industrial output of the country.

This "noncensus" industry was, however, the subject of private studies, of necessity on a limited local scale and mostly stressing the "peasant" or *kustar'* industry. In the twenty years preceding the revolution some two hundred investigations of the *kustar'* industry were made through the so-called local councils (*zemstva*), each covering in general only one province (*guberniia*) or an even smaller region. In 1871 a detailed description of the rural industry in the northern part of Viatka Province was published, the first of a series of monographs describing the conditions of Russian agriculture and closely connected rural industries.

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[1] The term "census" industry comes from the Russian word *tsenz* (qualification) and covers industrial enterprises that meet certain established standards. In the two industrial censuses carried out in Russia in 1900 and 1908, these standards were vaguely defined, and therefore the scope of the censuses was far from being uniform in all regions of the country (see A. T. Gozulov, *Istoriia otechestvennoi statistiki* [The History of Russian Statistics], Moscow, 1957, pp. 32–33). Only the first postrevolutionary industrial census, carried out in 1918, applied strictly defined standards. The census covered all industrial enterprises that were subject to the so-called *aktsiz* (indirect tax), all mining enterprises, and, among the remaining industrial enterprises, only those which employed sixteen or more workers with a prime mover or thirty or more workers without one.

Although interesting in themselves and throwing light on many aspects of the peasant industry, these partial investigations do not provide sufficient data for an over-all picture of employment and output in the *kustar'* industry, nor do they assess the share of small-scale industry in total industrial output. In 1923 A. A. Rybnikov, an outstanding student of the prerevolutionary *kustar'* industry, tried to summarize and tabulate the findings of the many investigations carried out between 1884 and 1913.[2] In accordance with the general attitude of many Russian social scientists of the populist school (*narodniki*), who looked upon the *kustar'* industry as a corollary of Russian agriculture rather than as a part of the industrialization process, Rybnikov's main concern was to discover the influence of the *kustar'* industry on the general economic situation of the Russian peasantry.

The paucity of broad statistical investigations explains the gross discrepancies that are found in later attempts by Soviet statisticians to assess the size, importance, and share of small-scale industry. One such assessment bears the seal of officialdom: it was made in the middle 1920's by a special committee created by the Central Statistical Administration.

This committee set itself the following tasks: first, to find out the number of people engaged in the "noncensus," *kustar'*, and artisan industry in 1913, 1920, 1923, and 1923/24 and the number of weeks worked; secondly, to estimate the gross value of output per person engaged in different industries and, by multiplying these estimates by employment, to compute the aggregate gross and net value of output of small-scale industry for these years; and, thirdly, to ascertain the final uses of the products of small-scale industry and to establish the source of supply of the industrial raw materials used. Since relatively more information was available for 1913, the committee took 1913 as the pivotal year from which data for other years were derived. The number of persons engaged in small-scale industry on USSR territory in 1913 was established from partial studies available for different industries and regions, separately for the city and the countryside. For regions for which data were lacking, estimates were made from the ratio of people engaged in nonfarm activity (*promyshlenniki*) to the total population in the neighboring regions. Since no data were available for employment in small-scale industries processing agricultural products (flour milling, oil processing, etc.) in 1913, it was assumed that the number of enterprises and people engaged in the food industry in 1913 was the same as in 1920, for which census data were available (for information on the 1920 data, see the next section).

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[2] See A. A. Rybnikov, *Melkaia promyshlennost' Rossii* [Small-Scale Industry in Russia], Moscow, 1923, p. 109.

Published in *Balance of the USSR National Economy in 1923/24*,[3] these data are the only official statistics available for study of prerevolutionary small-scale industry. They form the basis of our estimates presented in the next chapter.

Data for the Pre-Plan Period

THE INDUSTRIAL CENSUS OF 1920 [4]

In contrast to the industrial census taken two years earlier, the 1920 census did not cover the "census" industry alone, but all manufacturing and mining enterprises (including industrial fisheries and railroad repair shops) that met any one of the following requirements: (a) production at a special working place, (b) use of a mechanical motor, or (c) employment of hired workers. By this definition, only self-employed artisans working at home were excluded from this census.

Because of the unstable political situation in the country, the territorial coverage of the census was not complete. It was carried out in forty-nine provinces of Central Russia, four provinces of the Northern Caucasus and Don Region, six provinces of Western Siberia, seven provinces of the Kirghiz Republic, six regions of the Turkestan Republic, and nine provinces of the Ukraine.

The principal shortcoming of this census was that it was conducted by an inexperienced and unskilled staff. This affected not only the collecting of data, but also the processing and analyzing of the accumulated data which took a long time and was far from satisfactory. Nevertheless, this first attempt to take a census of total industry gave an approximate measure of the share of the "noncensus" industry in the total. And this share was considerable: "noncensus" industry in 1920 accounted for more than 93 per cent of all covered enterprises and for more than 45 per cent of all covered employment. This probably also holds true for 1913, since few changes occurred in the structure of industry between 1913 and 1927/28.

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[3] *Balans narodnogo khoziaistva SSSR na 1923/24 god, Trudy TsSU*, vol. 29, Moscow, 1926.

[4] Preliminary data from this census were published in *Trudy Tsentral'nogo Statisticheskogo Upravleniia* [Works of the Central Statistical Administration], Moscow, vol. 3, pt. 1, and more detailed findings broken down by provinces in *ibid.*, pts. 2–14.

THE CENSUS OF 1923 [5]

The next census, taken in March 1923 on the territory of the Soviet Union excluding Georgia, was basically a demographic and not an industrial census, although it contained questions on economic status. It encompassed all settlements that had a population of over 2,000 in 1920, settlements near railroad centers, and summer resorts, all of which covered only about a quarter of small-scale industry. It formed part of the basis for the assessment of the Soviet economy in 1923/24,[6] which also contained estimates for rural small-scale industry in 1923/24 and the official compendium of data for 1913 referred to above.

The 1923 census classified the urban population into the following groups: workers, domestic servants, employees, professional workers, employers and self-employed, family members helping in family enterprises outside the household, and all others. However, no clear distinction was drawn for the self-employed among industry, transportation, and trade. The census provided annual average employment data for 1922 and employment figures for December 1922 and March 1923.

THE PARTIAL INDUSTRIAL CENSUS OF 1925

This census, taken in 1925, covered the year 1924/25.[7] For rural areas, it was based in part on detailed investigation of a sample of 3.5 per cent of eligible enterprises and in part on a less detailed questionnaire for all registered enterprises filled out by local administrative agencies. For urban areas, the census covered all taxable enterprises. It is estimated that the general questionnaire covered 89.3 per cent of all eligible enterprises. Omissions were largest in the non-Russian borderlands (Central Asia, Yakutsk, etc.). Because of the inefficient method of collecting data, the results of this census were not entirely satisfactory.[8]

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[5] *Vsesoiuznaia gorodskaia perepis' 1923 goda* [The All-Union Urban Census of 1923], *Trudy TsSU,* vol. 20, pt. I, issues 1 and 2, Moscow, 1926.

[6] Published in *Balans narodnogo khoziaistvo 1923/24.*

[7] Published as *Melkaia i kustarno-remeslennaia promyshlennost' Soiuza SSR v 1925 godu* [Small-Scale, Cottage, and Handicraft Industry of the USSR in 1925], *Trudy TsSU,* vol. 33, pt. 1–2, Moscow, 1926–28.

[8] See D. V. Savinskii, *Kurs promyshlennoi statistiki* [Textbook on Industrial Statistics], Moscow, 1954.

THE CENSUS OF 1927 [9]

All attempts to assess small-scale industry before 1926/27 yielded only partial results. Moreover, it was not until 1926/27 that Soviet industry had recovered sufficiently from the revolution and the Civil War to permit an evaluation of its size and importance. It should also be noted that the monetary structure did not become stable until after the monetary reform of May 1924.[10]

A census of small-scale industry was conducted by the Central Statistical Administration in 1927, covering the year 1926/27. Unfortunately the details of how the data were collected are not known. From A. Debiuk [11] we learn that sampling techniques were used, the findings being imputed to cover all industry. Comparative data on large-scale industry were taken from the annual industrial report (form B) of the Central Statistical Administration for 1926/27.

The 1926/27 census defines small-scale industry only negatively, i.e., as all enterprises not included in "census" industry. Some exceptions had, however, been made to this rule for certain industries as early as 1925. With such a definition, small-scale industry formed an extremely heterogeneous group, ranging from medium-size factories to self-employed home workers. In the peasant industry, it was especially hard for the census takers to distinguish between a peasant's household activities, which were not covered by the census, and his industrial activities as a *kustar'*, which were.

The 1926/27 census covered all industries except fishing and logging. Since about 75 to 80 per cent of small-scale industry was rural, a great variety of products was covered. More than a hundred trades (*promysly*) were counted, but not all of them were listed individually. They were instead lumped together in larger groupings for comparison with large-scale industry, and the breakdown by trades and products was not given in great detail. According to Debiuk,[12] the 1926/27 census provided more reliable data on small-scale industry and its role in the economy as a whole than any previous census. Although it was based on only a sample, this census can be compared with the much more comprehensive one for 1928/29, which is discussed below. The main drawback of the 1926/27 census is that it gives information only on number of people employed and gross turnover (i.e., value of output at the shop, as opposed to the enterprise level); it does not report value of output, value added, number of weeks worked, and many other important data for small-scale industry.

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[9] Published in *Statisticheskii spravochnik SSSR za 1928* [USSR Statistical Handbook for 1928], Moscow, 1929.

[10] See N. Kovalevskii, *Problemy planovogo regulirovaniia narodnogo khoziaistva* [Problems of Planned Management of the National Economy], Moscow and Leningrad, 1928, p. 11.

[11] "Udel'nyi ves melkoi promyshlennosti Soiuza SSR v obshchem promyshlennom proizvodstve" [The Share of Small-Scale Industry in Total Industrial Production in the USSR], *Statisticheskoe obozrenie* [Economic Survey], 1929, No. 2, pp. 28–32.

[12] *Ibid.*, p. 29.

Data for the Plan Period

THE CENSUS OF 1929[13]

This was the first general census of small-scale industry undertaken in either Russia or the Soviet Union. It was started in the European part of the USSR on December 15, 1929, and in the Asiatic part on January 15, 1930. Because of weather conditions, the census was postponed in certain regions until the summer months of 1930 (part of the Dagestan ASSR and all of the Yakutsk ASSR). Data for those regions, which probably accounted for only 0.1 to 0.2 per cent of the total value of industrial output, were omitted from the published statistics. Special census takers were sent to all the known enterprises in a given territory to register them on one of two forms, form 2 being more detailed than form 1. All state-owned, cooperative, and so-called private-capitalist enterprises (those with three or more hired wage earners) had to register on form 2. Of the remaining small-scale producers, a sample (covering from 25 to 100 per cent of various industries) was registered on form 2 and the rest filled out form 1. The census was to cover all brickyards, half the vegetable oil industry, and a quarter of the flour milling and grain-cracking industry.

The 1928/29 census covered all enterprises of the "noncensus" industry that had been in operation at least one week without interruption or two weeks with interruptions between October 1, 1928, and October 1, 1929.[14] Even the smallest home shops with self-employed *kustari* were included. If one enterprise produced two different products by different production processes, then it was counted as two separate shops and had to fill out two separate forms.

A special problem was presented by the enterprises that were included in the census although technically they belonged in large-scale industry. Such enterprises were later removed from the census and the data on them were supposed to be handled separately. Nowhere in the census is there any mention of how many enterprises changed categories like this while the census was being taken. From another source[15] we learn that 1500 enterprises changed from small- to large-scale industry in 1932. We gather from the preface to the 1928/29 census that this process had already started in that year.

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[13] Published in three volumes entitled *Melkaia promyshlennost' SSSR po dannym vsesoiuznoi perepisi 1929 goda* [Small-Scale Industry in the USSR According to Data from the All-Union Census of 1929], Moscow, 1932–33, vols. 1 and 2.

[14] This last condition did not apply to brickyards, which were registered by the census even if they had been idle in the past year.

Home production for household needs was not included in the census, except for flour milling, grain cracking, and vegetable oil production. Auxiliary enterprises on collective farms were covered by the census even when they supplied only the members of their collective farms. However, industrial enterprises attached to schools, prisons, and other institutions were included only if they produced for the market or outside customers. Traveling workers who worked in the houses of individual customers were not included. Migrant workers were registered at their place of employment, not at their place of origin.

All branches of manufacturing and mining were covered. In farming, all strictly agricultural activities—such as cultivation of fields, market gardening, viniculture, cattle breeding, silkworm culture, bee keeping, poultry raising, and logging—were excluded. Similarly, the following activities were excluded, even when they supplied more than household needs: hunting, fishing, timber cutting, picking of berries, nuts, mushrooms, etc. Processing of agricultural products was covered by the census only when done in a special industry, such as grain grinding, fruit and vegetable canning, cheese and butter processing, etc. In the case of butter and cheese, only production on special premises for that purpose was included. The census did not cover any trades connected with construction, transportation, communication, or eating places or services.

Despite the considerable bulk of information furnished by the 1928/29 census, it does not give a detailed breakdown of some sectors, such as the food industry. The following kinds of data are generally given:

1. Number of persons employed (wage earners specified).
2. Gross turnover.
3. Gross value of output.
4. Number of working weeks.
5. Value of raw material, auxiliary material, and fuel used.

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[15] *Narodnoe khoziaistvo SSSR* [USSR National Economy], 1932, No. 7–8, p. 24.

6. Value added.
7. Value of fixed capital.
8. Breakdown of the above seven items into: (a) state enterprises, (b) cooperative enterprises, (c) private-capitalist enterprises (those with three or more hired workers), and (d) small private producers (*prostye tovaroproizvoditeli*).
9. Geographical distribution of small-scale industry.
10. Extent of territorial concentration of small-scale industry.

Items (1), (4), (8), (9), and (10) were covered by both forms 1 and 2, whereas the other items were covered by form 2 only. One of the characteristics of small-scale industry is the concentration of some specific trades in certain regions (*gnezdovost'*) where the peasant population specialized in producing a single product. Item (10) was designed to provide systematic statistics on this question.

From the viewpoint of completeness of information, elaboration of data, and adequacy of methods of collecting the data, the 1928/29 census is undoubtedly the most reliable of the published censuses of small-scale industry. It is the main source of information necessary for assessing the role of small-scale industry on the eve of the great industrialization drive, which so radically altered the structure and reduced the role of small-scale industry. Nevertheless, it should be recognized that this census was taken in a year hardly favorable to census-taking itself or to the fortunes of small-scale industry. Collectivization of agriculture was in full swing, and *kustari* and artisans were under strong pressure to join producer cooperatives. Many branches of the *kustar'* industry (blacksmithing, metal processing, baking, tanning, hemp processing, tailoring and dressmaking, cobbling, linen weaving, etc.) declined markedly between 1926/27 and 1928/29. At the same time, small-scale industry expanded in new areas, such as production of building materials, extraction of phosphates and peat, and repair and maintenance work.

The census omitted between 0.5 and 10 per cent of the enterprises in various industries, mainly the very smallest units—the self-employed home workers (*domashniki*). Omissions were relatively largest in the clothing industry, the leather and felt shoe industries, carpentry, brickworking and coopering.

THE INDUSTRIAL REGISTRATION OF 1934 [16]

A registration of all industrial enterprises, both large- and small-scale, was made at the beginning of 1934, the data to cover the year 1933. In urban areas the registration encompassed all operating industrial enterprises with prime movers, or without prime movers but with three or more workers; in rural areas, all enterprises with at least one worker —i.e., all enterprises except self-employed *kustari* and artisans.[17] Enterprises with thirty or more workers without a prime mover, and those with sixteen or more workers with a prime mover, are classified as large-scale industry, along with the following special cases: [18]

1. All alcohol distilleries, vodka refineries, breweries, and yeast factories, regardless of prime mover or number of workers.
2. In the dairy products industry, the *raion* base enterprises (*raionnye bazovye upravleniia*), generally combinations of several productive units.
3. All power stations with a capacity over 15 kw.
4. All glass factories with generator ovens.
5. All printing shops with more than fifteen workers, with or without prime mover.
6. All flour mills with five or more grinding units.
7. All tanneries with more than ten tan vats or three tan drums.
8. All enterprises under the jurisdiction of Union Republic ministries, regardless of size.

The 1933 registration gives data on the following items for both large- and small-scale industry: (1) average number of workers (evidently the sum of workers at the end of each month divided by 12); (2) number of enterprises (except fishing and logging); (3) fixed capital (for large-scale industry only); and (4) gross value of output in fixed "1926/27" prices.[19]

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[16] Published as "Itogi registratsii promyshlennykh predpriiatii SSSR v 1933" [Results of the Registration of USSR Industrial Enterprises in 1933] in *SSSR v tsifrakh* [The USSR in Figures], Moscow, 1935, and in *Plan,* 1935, No. 7.

[17] From another source (P. Smilga, "Za organizatsionno-khoziaistvennoe ukreplenie promkooperatsii" [For the Organizational and Economic Strengthening of Producer Cooperatives], in *Plan,* 1936, No. 1, pp. 14–17), we learn that on January 1, 1935, there were 295,000 independent *kustari* (not covered by the 1935 census) in the city and 115,000 in the country.

[18] See *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in the USSR], Moscow, 1935, p. 13.

[19] The value of output of independent *kustari* and artisans not covered by the 1933 registration is estimated by *TsUNKhU* at 100 million "1926/27" rubles, or 2.7 per cent of the total for covered small-scale industry. See I. Demirchoglian,

Nature of Statistics

This registration was taken at a time when almost all Soviet industry was subject to comprehensive economic planning. The fact that most industrial enterprises were owned by the state or by cooperatives made it easier to avoid omissions. For the first time employment data were given for small-scale industry on an average annual basis. The coverage of the census, within the limits described above, appears to be complete. The greatest defect is the limited categories of data.

The 1933 industrial registration is the last published statistical document in which data for small-scale industry are given separately. Soviet sources mention that between 1932 and 1938 a census of the small-scale industry was carried out regularly every two years; after 1938, every year; and after 1954, twice every five years.[20] The findings of these censuses have, however, not been published.

Summary

As we have noted, the primary sources of data on small-scale industry are few in number and differ considerably from one another in the nature, scope, and reliability of statistics contained within them. It was not until the census covering 1926/27 that a systematic and comprehensive survey was made. Unfortunately, the data are limited to gross value of turnover and number of persons employed, both full- and part-time. The censuses for 1928/29 and 1933 contain much more useful and comprehensive information. It is worth noting that none of the primary sources contains data on output in physical terms. Although the questionnaire in the census for 1928/29 had a question on output, no trace of physical output statistics can be found in the three volumes of findings.

Despite the shortcomings and deficiencies of the basic data, they form a basis for studying the economic record of small-scale industry, as we shall see in the succeeding chapters. They must, however, be adjusted in many ways (described in the appendix to this report) and handled carefully. And, of course, all statistical measures must be viewed as orders of magnitude, with rather wide ranges of error. Conclusions so circumscribed remain nonetheless illuminating and meaningful.

"Nekotorye itogi perepisi promyshlennosti SSSR za 1933 god" [Some Results of the 1933 Industrial Census in the USSR], *Plan,* 1935, No. 8, pp. 9–13.

[20] See Gozulov, *Istoriia otechestvennoi statistiki,* p. 146.

CHAPTER 3

Small-Scale Industry on the Eve of the Revolution

As already pointed out, prerevolutionary statistics on small-scale industry are poor, being limited to private studies covering only selected industries or areas. This chapter presents our estimates of employment and value of output in small- and large-scale industry as based on the findings of the special committee of the Central Statistical Administration whose study of prerevolutionary industry, made during the 1920's, was referred to in the first section of the preceding chapter. Like the estimates of the special committee, ours apply to 1913 within the interwar territory of the Soviet Union; unlike the committee estimates, ours exclude repair shops, in accord with general practice in the West, but include logging and fishing, sectors incorporated within the bounds of industry during the Plan period, though not included there earlier. After presenting our estimates, we compare them with those of certain Soviet scholars.

Our Estimates

Industrial employment in 1913 amounted to about 5.8 million persons in full-time equivalents, almost equally divided between the large- and small-scale sectors (see Table 1).[1] The small-scale sector accounted for more than half of employment in the cases of wood and paper products, textiles, logging, and fishing.[2] Employment in small-scale industry

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[1] Recent Soviet sources give the average annual number of workers and *kustari* for 1913 within the interwar Soviet territory as approximately 5.4 million (see, e.g., *Narodnoe khoziaistvo SSSR* [National Economy of the USSR], Moscow, 1956, p. 44). This figure probably includes repair shops and fishing and logging. Our estimate including repair shops would be 5.9 million full-time employed persons (see Table A-2).

[2] Fishing and logging have been put entirely within small-scale industry because of the peculiar character of their seasonal and rural employment. Soviet statistical

TABLE 1

Persons Engaged in Large- and Small-Scale Industry,[a] by Industrial Group, 1913

Industrial Group	*Thousand Full-Time Equivalents*			*Per Cent*	
	Large-Scale	Small-Scale	Total	Large-Scale	Small-Scale
Ferrous and nonferrous metals[b]	425	—	425	100	—
Fuel	314	1	315	100	—
Electric power stations	20	—	20	100	—
Chemicals[c]	56	14	70	80	20
Machine building and metal products[d]	391	211	602	65	35
Logging, wood and paper industry	176	897	1,073	16	84
Logging	—	413	413	—	100
Wood and paper industry	176	484	660	27	73
Construction materials	168	63	231	73	27
Printing	70	9	79	89	11
Textiles and allied products	773	1,074	1,847	42	58
Food and allied products	448	624	1,072	42	58
Food processing	448	347	795	56	44
Fishing	—	277	277	—	100
All others	23	60	83	28	72
Total	2,864	2,953	5,817	49	51

Source: Table A-2.

[a] On interwar Soviet territory, excluding repair shops.

[b] Includes mining ores.

[c] Includes rubber.

[d] Excludes repair shops.

— negligible.

was distributed as follows among industrial groups: textiles and allied products, 36 per cent; wood and paper industry, 16 per cent; logging, 14 per cent; food processing, 12 per cent; fishing, 9 per cent; machinery and metal products, 7 per cent; and all others, 6 per cent.

The gross value of industrial output in 1913 was about 9.2 million rubles,[3] a third being accounted for by small-scale industry (see Table

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sources of the 1920's and early 1930's give the number of wage earners in logging and fishing under data for agricultural employment (see, for example, *SSSR v tsifrakh* [The USSR in Figures], Moscow, 1935, p. 162). Until 1932 they excluded seasonal workers in timber cutting who were hired with their own horses and carts. Our estimates (Table 1) cover such seasonal workers along with self-employed producers.

[3] For 1926/27, 1927/28, and 1928/29, value added was about 41 per cent of value of output in all industry (G. Warren Nutter, *Growth of Industrial Production in the Soviet Union,* Princeton for National Bureau of Economic Research, 1962,

TABLE 2

GROSS VALUE OF OUTPUT OF LARGE- AND SMALL-SCALE INDUSTRY,[a] BY INDUSTRIAL GROUP, 1913

Industrial Group	*Million Rubles* Large-Scale	Small-Scale	Total	*Per Cent* Large-Scale	Small-Scale
Ferrous and nonferrous metals [b]	444	—	444	100	—
Fuel	647	—	648	100	—
Electric power stations	105	—	105	100	—
Chemicals [c]	270	9	279	97	3
Machine building and metal products [d]	646	129	775	83	17
Logging, wood and paper industry	260	994	1,254	21	79
Logging	—	842	842	—	100
Wood and paper industry	260	152	412	63	37
Construction materials	148	33	181	82	18
Printing	92	8	100	92	8
Textiles and allied products	1,574	864	2,438	65	35
Food and allied products	1,887	1,066	2,953	64	36
Food processing	1,887	932	2,819	67	33
Fishing		134	134		100
All others	29	38	67	43	57
Total	6,103	3,142	9,245	66	34

SOURCE: Table A-3.

[a] On interwar Soviet territory, excluding repair shops.

[b] Includes mining of ores.

[c] Includes rubber.

[d] Excludes repair shops.

— negligible.

2). The share of the small-scale sector exceeded a third in logging, the wood and paper industry, textiles and allied products, and fishing. The percentage breakdown for small-scale industry alone was as follows: food processing, 30 per cent; textiles and allied products, 27 per cent; logging, 27 per cent; the wood and paper industry, 5 per cent; fishing, 4 per cent; machinery and metal products, 4 per cent; and all others, 3 per cent.

Rybnikov's and Gukhman's Estimates

Professor A. A. Rybnikov conducted a life-long study of the *kustar'* industry. The data on small-scale employment and value of output

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Table C-2). If the same fraction applied to 1913, value added for that year would be about 3.8 billion rubles.

given in his two books[4] are primarily based on the long series of semiprivate investigations conducted mainly by local and provincial councils (*zemstva*) in forty provinces of European Russia, twenty-seven being studied from 1903 to 1913 and the other thirteen from 1883 to 1903. After compiling the data from these local studies—based on interviews with *kustari* in the villages where specific industries were concentrated—and after correcting some data that he considered obsolete or incomplete, Professor Rybnikov derived the figures given in Tables 3 and 4 below.[5]

TABLE 3

COMPARISON OF DIFFERENT ESTIMATES OF PERSONS ENGAGED IN LARGE- AND SMALL-SCALE INDUSTRY,[a] 1908, 1912, OR 1913

	Rybnikov [b]	Gukhman [c]	Grinevetskii [d]	NBER [e]
		MILLION PERSONS		
Large-scale industry	2.7	2.6	2.8	2.9
Small-scale industry	5.2	5.1	1.3	3.5
Urban	1.2	1.3		
Rural	4.0	3.8		
		MILLION FULL-TIME EQUIVALENTS		
Large-scale industry	2.7	2.6	2.8	2.9
Small-scale industry	2.9 [f]	2.9 [f]	[g]	2.3

[a] Excluding repair shops, logging, and fishing.

[b] For 1908 and 1910 (urban small-scale industry only) on Tsarist territory, excluding Finland. Taken from A. Finn-Enotaevskii, *Kapitalizm v Rossii* [Capitalism in Russia], Moscow, 1925, vol. I, p. 132, as data reproduced from Rybnikov's book which is not available in the United States.

[c] For 1913 on Soviet interwar territory. Gukhman in *Planovoe khoziaistvo*, 1924, No. 6, p. 87. The figures for small-scale industry are midpoints of a range.

[d] For 1912 on Tsarist territory excluding Finland. V. I. Grinevetskii, *Poslevoennye perspektivy russkoi promyshlennosti* [Postwar Prospects of Russian Industry], 2nd ed., Moscow, 1922, p. 13. Excludes artisans engaged part-time in industrial activities (see text).

[e] For 1913 on interwar Soviet territory. Tables A-1 and A-2.

[f] Our figures. Average work year in small-scale industry taken as 27 weeks (see notes to Table A-2) and full-time work year as 48 weeks.

[g] Cannot be estimated because of incomplete coverage of *kustar'* employment.

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[4] *Melkaia promyshlennost' i ee rol' v vosstanovlenii russkogo narodnogo khoziaistva* [Small-Scale Industry and Its Role in the Reconstruction of the Russian National Economy], Moscow, 1922, and *Melkaia promyshlennost' Rossii* [Small-Scale Industry in Russia], Moscow, 1923.

[5] Data for urban artisans were derived from an investigation of urban settlements carried out in 1910 by the prewar Ministry of Trade and published in 1916 as *Remeslenniki i remeslennoe upravlenie* [Artisans and Handicraft Administration], Petrograd, 1916. This investigation was far from complete, covering, according to

TABLE 4

COMPARISON OF DIFFERENT ESTIMATES OF GROSS VALUE OF OUTPUT OF LARGE- AND SMALL-SCALE INDUSTRY,[a] 1908, 1912, OR 1913
(billion current rubles)

	Rybnikov [b]	Gukhman [c]	Grinevetskii [d]	NBER [e]
Large-scale industry	4.9	5.6	4.5	6.1
Small-scale industry	2.4	1.3	1.0	2.2
Urban	0.7	0.6		
Rural	1.7	0.7		

[a] Excludes repair shops, logging, and fishing.

[b] For 1908 on Tsarist territory excluding Finland. Finn-Enotaevskii, *Kapitalizm v Rossii*, I, p. 132.

[c] For 1913 on interwar Soviet territory. Gukhman in *Planovoe khoziaistvo*, 1924, No. 6, p. 87.

[d] For 1912 on Tsarist territory excluding Finland. Grinevetskii, *Poslevoennye perspektivy*, p. 13, and Petrov, *Promyshlennaia kooperatsiia*. Excludes *kustari* engaged only part-time in industrial activity (see text).

[e] For 1913 on interwar Soviet territory. Table A-3.

Using the same material, another Soviet economist, B. Gukhman, estimated employment and gross value of output of the urban and rural small-scale industry for 1913, adjusting the data to the interwar Soviet territory.[6] When the differences—working in opposite directions —in time and territorial coverage are taken into account, Gukhman's estimates of employment seem to agree with those of Rybnikov, but this is not the case for their value of output estimates. According to Rybnikov's estimates, small-scale industry accounted for a third of the total value of industrial output, while, according to Gukhman's estimates, it accounted for only a fifth. This discrepancy is explained by the different statistical treatment of the small-scale milling industry followed by Rybnikov and Gukhman. Rybnikov, in inflating the data on the sample of *kustar'* industry covered by the partial investigations, counted the value of grain brought to the flour mills by private customers for processing as part of the value of output of flour mills,

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B. Gukhman ("K ischisleniiu produkstii melkoi promyshlennosti" [On Measuring the Output of Small-Scale Industry], *Planovoe khoziaistvo* [Planned Economy], 1924, No. 6, pp. 87 ff), only 71.5 per cent of the urban population within the interwar Soviet territory. However, it provided a basis for estimating the handicraft population and its value of output. G. P. Petrov (in *Promyshlennaia kooperatsiia i kustar'* [Industrial Cooperatives and the *Kustar'*], Petrograd, 1916) adjusted the data of the 1910 investigation, and both Rybnikov and Gukhman made use of them.

[6] Gukhman in *Planovoe khoziaistvo*, 1924, No. 6.

and carried out the inflation for all industry including flour mills. Gukhman, on the other hand, inflated the data excluding flour mills and added the value of grain processed to the inflated figure. Rybnikov's procedure seems to be sounder, since Gukhman's estimate is a mixture of value of output (for all industry except flour milling) and value added (for a considerable part of flour milling).

In addition to making such over-all calculations, Gukhman also estimated the share of the small-scale sector in the gross value of output of certain industries. He estimated this share as 22 per cent for metal processing, 52 per cent for wood processing, 72 per cent for shoes and processing of materials of animal origin, and 22 per cent for the textiles and garment industry.[7]

Grinevetskii's Estimates

Another set of estimates was calculated by Professor V. I. Grinevetskii.[8] They suffer from a serious shortcoming, because they do not cover *kustari* who worked at home and whose industrial activity was secondary to their agricultural production.[9] That is, Grinevetskii included as *kustari* only those rural artisans who were employed full-time in industry. Russian economists working in this field generally agree that Grinevetskii severely underestimated the importance of small-scale industry.[10]

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[7] *Promyshlennost' i narodnoe khoziaistvo* [Industry and the National Economy], Moscow, 1927, p. 95. A more detailed breakdown of this nature is given by A. Morgenshtern in "Melkaia promyshlennost' v 1921 godu" [Small-Scale Industry in 1921], *Narodnoe khoziaistvo* [National Economy], 1922, No. 4.

[8] *Poslevoennye perspektivy.*

[9] Finn-Enotaevskii (*Kapitalizm v Rossii,* I, pp. 114 ff) complains that Grinevetskii erroneously interpreted Petrov's data (*Promyshlennaia kooperatsiia*) as covering urban artisans and *kustari,* when in reality Petrov speaks only of the urban component. Whatever the importance of this mistake, the main difference between Rybnikov's and Grinevetskii's estimates lies no doubt in the definitions they use of *kustar'* and artisan production.

[10] The data on the *kustar'* population in 1913 derived by Rybnikov and Gukhman were confirmed, by and large, by the agricultural census carried out in thirty-two European provinces, in some Ural regions, and in nine Siberian provinces in the summer of 1917. According to this census (which did not cover eight provinces and gathered only incomplete information in seven others), there were 3,078 thousand *kustar'* enterprises in 1917 employing 4,616 thousand *kustari.* These data seem to include the peasant domestic industry, not working for the market, as well as peasants migrating to seasonal occupations in cities (see *Trudy Tsentral'nogo Statisticheskogo Upravleniia* [Works of the Central Statistical Administration], vol. 7, pp. 1 and 208 ff).

Strumilin's Estimates

A different method of assessing the role of prerevolutionary small-scale industry was employed by S. G. Strumilin,[11] who made use of the tax reports of Russian industrial enterprises. In 1899 all taxable enterprises in Russia were divided into eight categories, the six largest being assessed on their volume of production. The last two categories covered enterprises employing from two to sixteen hired workers. Self-employed *kustari* and artisans, as well as small producers with one hired worker, were not included in the categories of taxable enterprises. To assess the number of uncovered enterprises, the following procedure was used. In the 1897 population census, for each enterprise with two to four hired workers, there were two enterprises with one hired worker and eighteen shops with self-employed artisans and *kustari*.[12] Using those ratios, Strumilin estimated the number of *kustar'* and artisan enterprises in 1913.

To assess the gross value of output in small-scale industry, Strumilin utilized the findings of Gukhman.[13] The value of output per urban handicraftsman in 1900 was estimated at 560 rubles and per *kustar'* as 178 rubles for an estimated working year of 25.4 weeks. Using these data and assuming that the working season for *kustari,* for whom the *kustar'* industry was their main source of subsistence, was nine months out of a year and for others, for whom it was only an auxiliary activity, four months, Strumilin estimated the annual value of output per person for the former group as 267 rubles and for the latter group as 120 rubles. It should also be noted that Strumilin assumed that the small-scale enterprises with two or more workers located in urban settlements had a higher value of output per engaged person (560 rubles) than the shops with one worker or without hired labor concentrated in the countryside (267 or 120 rubles).

From the number of people engaged and the value of their output, Strumilin derived for 1913 the gross value of output of the small-scale industry as 1,950 million rubles (see Table 5).[14] By adding the gross

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[11] S. G. Strumilin, "Nash dovoennyi tovarooborot" [Our Prewar Commodity Turnover], *Planovoe khoziaistvo,* 1925, No. 1.

[12] *Ibid.,* p. 102.

[13] *Planovoe khoziaistvo,* 1924, No. 6, pp. 90–93.

[14] Gukhman, by using the same method and data, calculated the gross value of output for small-scale industry for 1900–12 (see "Dinamika promyshlennosti Rossii v sviazi s dinamikoi narodnogo khoziaistva" [The Dynamics of Russian Industry in Connection with the Dynamics of the National Economy] in *Promyshlennost' i narodnoe khoziaistva,* p. 82). Gukhman's estimates are reproduced in Table 5.

It should be noted that the estimate of gross value of output for 1908 given by

TABLE 5

GROSS VALUE OF OUTPUT OF LARGE- AND SMALL-SCALE INDUSTRY ESTIMATED FROM TAX REPORTS, 1900–13 [a]
(million current rubles)

	Total Industry	Large-Scale Industry	*Small-Scale Industry* [b]			Small-Scale Industry as Percentage of Total Industry
			Total	With Hired Labor	Self-Employed	
1900	5,963	3,761	1,702	680	1,022	31
1901	5,332	3,906	1,416	619	807	27
1902	5,418	4,029	1,384	599	785	26
1903	5,408	4,162	1,246	569	677	23
1904	5,637	4,217	1,420	613	807	25
1905	5,527	4,230	1,297	596	701	24
1906	5,294	4,136	1,158	504	654	21
1907	5,836	4,621	1,215	555	660	21
1908	6,105	4,800	1,305	609	696	21
1909	6,338	4,982	1,355	628	727	21
1910	6,429	4,977	1,452	662	790	22
1911	6,931	5,451	1,480	679	801	21
1912	7,900	6,194	1,706	848	858	22
1913	8,832	6,882	1,950	958	992	22

SOURCE: 1900–12, Gukhman in *Promyshlennost' i narodnoe khoziaistvo,* p. 82; 1913, Strumilin in *Planovoe khoziaistvo,* 1925, No. 1.

[a] On Tsarist territory excluding Finland. Excludes repair shops, logging, and fishing.

[b] Industrial enterprises and *kustar'* and artisan shops employing fewer than eight workers with a prime mover or fewer than sixteen without one.

value of output of enterprises subject to taxation, Strumilin derived the gross value of output of the total, large-, and small-scale industry.

More recently, Strumilin has estimated the 1913 share of small-scale industry as 37 per cent of the gross value of output expressed in

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Rybnikov (Table 4) is considerably larger than that derived by Gukhman. The reason is the inclusion by Rybnikov and the exclusion by Gukhman of the value of grain processed in flour mills. Rybnikov estimated the number of people engaged in small-scale industry in prerevolutionary Russia (including the Polish provinces) as 4 million and the gross value of output as 1,700 million rubles. This gives 425 rubles as the annual output per person engaged, whereas Gukhman gives (excluding flour milling) only 196 rubles (*ibid.,* pp. 69 ff). Gukhman reproached Rybnikov for committing a substantial error in deriving the output per person engaged in small-scale industry without excluding data on flour milling.

Gukhman's and Strumilin's estimates from tax reports given in Table 5 reveal a distinct, though gradual, decline in the share of small-scale industry from almost a third of the total value of output in 1900 to less than a quarter in 1913.

1926/27 rubles.[15] The large discrepancy between this and his earlier estimate may be explained by the fact that the latter did not include logging, fishing, and hunting—which were included in small-scale industry in 1913—whereas the former, in accordance with the accepted Soviet concept of industry, includes those sectors.[16] It is worth noting that in his earlier article[17] Strumilin estimates the gross value of output of logging, fishing, and hunting in 1913 as 914 million rubles, or almost 7 per cent of the value of agricultural output. If this sum is added to his earlier estimates of the value of output of small-scale industry in 1913, the share of small-scale industry in the total industrial output becomes 29 per cent. The remaining discrepancy between the earlier and later estimates is in part explained by the fact that the prices of consumer goods increased much more than the prices of producer goods between 1913 and 1926/27, which, since most of the output of small-scale industry was consumer goods, made the share of small-scale industry in total industrial output larger in 1926/27 prices than in 1913 prices.

Differences in Estimates

It is difficult to compare these various estimates because the years, territorial coverage, and definitions of industry vary. In the primitive, predominantly peasant economy of prerevolutionary Russia, it was difficult to draw a line between industry proper and the semi-industrial activity of the rural population. If the definition of industry is standardized, our estimate of employment, based on the official data of the Central Statistical Administration, is smaller than Rybnikov's and Gukhman's for small-scale industry, but larger for large-scale industry (see Table 3). Our estimate of gross value of output, also based on official data, is also larger than both of theirs for large-scale industry, but smaller than Rybnikov's and larger than Gukhman's for small-scale industry (see Table 4). The nature of these discrepancies suggests that there are a number of hidden inconsistencies in the ways all these estimates are made, in addition to the differences in territorial coverage. Despite the differences in detail, there is a rough con-

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[15] Article by S. G. Strumilin in *Sovetskaia sotsialisticheskaia ekonomika, 1917–57* [The Soviet Socialist Economy, 1917–57], Moscow, 1957, p. 128.

[16] The official Soviet index of industrial production implies that small-scale industry, on interwar Soviet territory and apparently including logging and fishing, accounted for 32 per cent of the gross value of industrial output for 1913 in "1926/27" prices (see Table 20).

[17] *Planovoe khoziaistvo,* 1925, No. 1, p. 118.

TABLE 6

COMPARISON OF DIFFERENT ESTIMATES OF PERCENTAGE SHARES OF SMALL-SCALE INDUSTRY IN EMPLOYMENT AND GROSS VALUE OF OUTPUT, PREREVOLUTIONARY YEAR

	Percentage Share in	
	Employment [a]	Gross Value of Output [b]
Industry excluding logging and fishing [c]		
Tsarist territory		
Rybnikov (1908)	52	33
Grinevetskii (1912)	33	18
Strumilin (1913)	n.a.	22
Interwar Soviet territory		
Gukhman (1913)	53	19
NBER (1913)	44	26
Industry including logging and fishing [c]		
Tsarist territory		
Strumilin (1913)	n.a.	37 [d]
Interwar Soviet territory		
Official Soviet production index (1913)	n.a.	32 [d]
NBER (1913)	51	34

SOURCE: Tables 1 through 5 and 19. For Strumilin's estimate including logging and fishing, *Sovetskaia sotsialisticheskaia ekonomika*, p. 128.

[a] Persons engaged adjusted to full-time equivalents.

[b] In current rubles except as noted.

[c] Repair shops are also excluded from the estimates excluding logging and fishing, and from the NBER estimate including the latter. They were of little significance in this period (see Tables A-2 and A-3).

[d] In "1926/27" rubles.

n.a. not applicable.

sistency among the derived estimates of the percentage share of small-scale industry in employment and gross value of output (see Table 6).

Unfortunately, this is about as far as one can go in reconciling inconsistencies. We prefer our estimates because they are based on data collected and processed over a number of years, while statistical work was still relatively free of political considerations.

Summary

What was the position of small-scale industry on the eve of the revolution? It had about half of the employment and a third of the value of output of all industry. It was primarily engaged in producing consumer goods, with about three-fifths of its employment and value of output devoted to the textile and food industries. In that sector, it accounted for almost three-fifths of total employment and more than a third of total value of output of all industry. Finally, it was mainly rural: *kustari* and other small rural establishments accounted for 80 per cent of its employment and 70 per cent of its value of output.

In brief, this was an important segment of prerevolutionary Russian industry, predominantly rural and handicraft but the basis for much that was to follow.

CHAPTER 4

Small-Scale Industry in the Pre-Plan Period

The "Traditional" Small-Scale Industry

WORLD WAR I and the civil war that followed brought about a sharp decline in industrial activity, affecting the small-scale as well as the large-scale sector. The restrictive policy of War Communism, actually forbidding private trade, curtailed the activities of *kustari* and artisans, but the results were not as severe as in the large-scale sector. In 1920, when large-scale output had dropped to about 20 per cent of its prerevolutionary volume,[1] the number of persons engaged in small-scale industry was still 40 per cent of its prerevolutionary level, less in urban areas (26 per cent) and more in rural areas (62 per cent).[2]

The shift to the New Economic Policy (NEP) in 1921 caused a rapid recovery of small-scale industry. A statement issued by the Congress of Producer Cooperatives in April 1923 declares that "the *kustar'* industry supplies the market with more than half of the products supplied by large-scale industry" and that "the *kustar'* industry is overcoming the depression quicker than large-scale industry." The same statement estimates that the share of the *kustar'* industry in the total gross value of industrial output was 27 per cent in 1920, 31 per cent in 1921, and 36 per cent in 1922.[3] By 1926/27 the number of *kustari* and artisans had returned to its prerevolutionary level and by 1928/29 it was 23 per cent higher (see Table A-1). However, the length of the work year had declined so that employment in full-time equivalents was 29 per cent below the 1913 level in 1926/27, 18 per cent in 1927/28, and 24 per cent in 1928/29. According to Tikhomirov, between 1922 and 1929 the number of persons engaged in small-scale industry increased by 9.5 per cent annually and the value of its output by 5 per cent, whereas employment in the prerevolutionary period had not increased by more than 2 per cent annually.[4]

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[1] G. Warren Nutter, *Growth of Industrial Production in the Soviet Union,* Princeton for NBER, 1962, Table 47.

[2] V. A. Tikhomirov, "Promyslovaia kooperatsiia na sovremennom etape" [Producer Cooperatives at the Present Stage], *Vestnik promyslovoi kooperatsii* [Bulletin of Producer Cooperatives], 1931, No. 8, p. 3.

[3] I. Strel'nikov, "S'ezd kustarno-promyslovoi kooperatsii" [The Congress of *Kustar'* Producer Cooperatives], *Vestnik sel'skokhoziaistvennoi kooperatsii* [Bulletin of Agricultural Cooperatives], 1923, No. 11, pp. 42 ff. In view of the fact that large-scale industry declined more than small-scale industry between 1913 and 1920, these

Many factors contributed to the increasing importance of small-scale industry during the NEP. The disorganization of communications and the disintegration of national markets made the Soviet population even more dependent on local industries than in the prerevolutionary period. Moreover, the famine of 1919–21 had forced industrial workers to return to the countryside, and they brought their industrial skills with them. The disappearance of the big estates, which had been the main producers of agricultural raw materials, and the redistribution of the land induced the peasants to cultivate raw materials for use in local *kustar'* and peasant home industries. During the years of War Communism when the flow of industrial consumer goods to the countryside stopped altogether, the peasantry learned to rely on their own limited, local productive means.

An additional incentive for development of small-scale industry was created by operation of the "price scissors": the price level was rising more rapidly for commodities produced by state-operated factories than for rural products. *Kustari* were able to compete successfully with the state-owned factories in many activities, such as tanning, wool processing, and linen spinning and weaving.

The loss of the Polish and Baltic provinces, which had supplied the Russian market with a sizable quantity of consumer goods, diminished the role of large-scale industry and also increased the dependence of the Soviet consumer on small-scale industry. About 40 per cent of the old Russian woolen industry was located in the Polish provinces. Riga Province was the main supplier of rubber footwear. The economic importance of the lost Western provinces can be seen from Table 7.

The "agrarianization" of the Soviet economy at the beginning of

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figures all seem low in comparison with estimates for 1913 (see Table 6), even when logging and fishing are eliminated from consideration. However, the important point is the increase shown in the fractions, not their actual level.

[4] Tikhomirov in *Vestnik promyslovoi kooperatsii*, 1931, No. 8, p. 3.

TABLE 7

ENTERPRISES, WORKERS, AND GROSS VALUE OF OUTPUT IN RUSSIAN LARGE-SCALE MANUFACTURING ACCOUNTED FOR BY THE WESTERN PROVINCES, 1908

	Amount			*Percentage of Total for Russia*		
	Enterprises (number)	Workers (thousands)	Value of Output (million rubles)	Enterprises	Workers	Value of Output
Baltic Provinces	2,033	264.8	698.4	10	12	15
Polish Provinces	3,172	270.2	523.6	16	13	11
White-Russian and Lithuanian Provinces	1,967	56.4	99.0	10	3	2
Total	7,172	591.4	1,321.0	36	27	29

SOURCE: *Statisticheskie svedeniia po obrabatyvaiushchei fabrichno-zavodskoi promyshlennosti Rossiiskoi Imperii za 1908 god* [Statistical Summary of the Manufacturing Industry in the Russian Empire in 1908], St. Petersburg, 1912, pp. 8 f.

Detail may not sum to total because of rounding.

the NEP, the decline in urban population and industry, the acute shortage of fuel and energy for large-scale industry, the decline of market production in general and of technical crops in particular, which had formed the basis of the state consumer goods industry—all these factors weakened large-scale industry and at the same time favored the rapid development of local, small-scale industry. The growing importance of small-scale, privately owned industry became a serious problem, both economically and politically, to Soviet economists as well as to the Party authorities.

Regional Concentration of Small-Scale Industry

One of the peculiarities of small-scale industry in the pre-Plan period was its concentration in certain geographical areas. Small-scale industry was of two types, depending on the nature of the market. One, consisting of producers who supplied a limited local market and filled orders for individual customers, was dispersed throughout the country (blacksmiths, tailors, shoemakers, millers, etc.). The other, consisting of small shops specializing in the production of specific items for a much larger market, was geographically concentrated in particular regions according to specialty, each region being known for the high quality of the commodities it specialized in. This geographic concentration of shops, the so-called "nests" (*gnezda*) of specific local industries, was of special interest to the organizers of the 1928/29 small-scale industry census, and it became the subject of one full volume of this census. This is not accidental. The 1928/29 census was taken with the idea of incorporating small-scale industry into the over-all, nationally planned economy. Of all the different types of small-scale industry, that concentrated in specific areas was the easiest to reorganize and incorporate into large-scale industry, because technologically and economically it was similar to factory production. Therefore it was singled out for special attention.

The census used a formal definition for small-scale industry concentrated in certain areas: if more than fifty small shops in nearby settlements produced the same commodity, these shops were considered to form a "census nest" (*tsenzovoe gnezdo*); [5] if there were fewer than fifty shops, they were considered to form a "noncensus nest." It often happened that production of a commodity in a particular region was carried out in factories as well as in "nests" and Table 8 compares production organized in these two ways. In full-time equivalents, 1928/29 employment in all "nests" amounted to 19 per cent of the total for small-scale industry and 8 per cent of the total for all industry.[6]

The *kustar'* industry concentrated in certain areas served as a reserve of skill and equipment upon which the authorities could draw in their industrialization drive. For instance, in Tula *oblast'* and the Pavlovo region, both famous for their small-scale metal industry even before the revolution, there was a division of labor, long established and still existing in the 1920's, between the factories, which provided the *kustari* with semifabricates, and the *kustari*, who produced the finished goods. In such areas, the *kustar'* sector was closely integrated with the factories so that its technology tended to be more advanced than in small-scale industry generally, facilitating its absorption into large-scale industry. An examination of the Soviet industrial map would show that the regions where "nests" used to be concentrated are now important industrial centers. In such regions the transformation into factory production did not even go through the stage of producer cooperatives. Factories were established using not only the skill of the *kustari* but also often their equipment.

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[5] The fact that the term "census nest" was used implies that the organizers of the small-scale industry census intended to include it in "census" industry.

[6] For totals, see Table A-2. Full-time work year is taken as 44 weeks.

TABLE 8

RELATIVE IMPORTANCE OF SMALL-SCALE "NESTS" AND LARGE SCALE ENTERPRISES OPERATING IN THE SAME INDUSTRIES AND REGIONS, 1928/29

			Persons Engaged		*Man-Weeks Worked*	
	No. of "Nests"	No. of Shops	Thousands	Per Cent	Thousands	Per Cent
All small-scale "nests"	3,445	764,651	1,196	92	18,776	81
All comparable large-scale enterprises [a]		306	111	8	4,447	19
Total		964,957	1,307	100	23,223	100
Small-scale "census nests"	3,175	753,874	1,178	92	18,558	81
Comparable large-scale enterprises [a]		297	109	8	4,376	19
Total		754,171	1,287	100	22,934	100
Small-scale "noncensus nests"	270	10,777	18	91	218	76
Comparable large-scale enterprises [a]		9	2	9	70	24
Total		10,786	20	100	288	100

SOURCE: *Melkaia promyshlennost' SSSR po dannym vsesoiuznoi perepisi 1929 goda* [Small-Scale Industry in the USSR According to Data from the All-Union Census of 1929], Moscow, 1932–33, vol. II, p. xi.

[a] A comparable large-scale enterprise is one producing the same products as one or more "nests" located in the same region. For explanation of "nests," see text.

Ownership of Small-Scale Enterprises

Small-scale industry in the 1920's was, both socially and economically, a heterogeneous category. It ranged from large shops with hired labor that for various reasons did not meet census requirements down to home shops of self-employed *kustari* who were helped by members of their families and for whom manufacturing was often secondary to their main economic activity—agriculture. From the organizational point of view, small-scale enterprises were of three types: (1) those operated by the state; (2) those operated cooperatively, either in the four official cooperative systems (agricultural, producer, consumer, and invalid cooperatives)[7] or independently as unattached cooperatives (*dikie kooperativy*); and (3) those operated by private owners, some using hired labor[8] and others consisting solely of the *kustar'* or artisan owner and members of his family.

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[7] Besides these four cooperative systems, there were also some workers' collectives organized by the unemployed in the cities, the so-called *komborbez*. They were not of much importance.

The relative importance of each of these groups in 1925 and 1928/29 is shown in Table 9. Between 1925 and 1928/29, the share in total small-scale employment of state-owned enterprises rose from 1 to 4 per cent, and the share of cooperative enterprises from 5 to 21 per cent. On the other hand, the share of the private sector declined from 94 to 75 per cent. The transformation of small, private shops into state-owned and cooperative enterprises was already well under way by 1928/29, facilitating the later absorption by large-scale industry.[9]

Relative Importance of Small-Scale Industry

The share of employment, in full-time equivalents, accounted for by small-scale industry declined from 59 per cent in 1913 to 43 per cent in 1926/27, 45 per cent in 1927/28, and 40 per cent in 1928/29; the share of value of output, from 34 to 31 per cent, 29 per cent, and 27 per cent, respectively (see Tables 1, 2, 10, and 11). There are two main reasons for this decline. On the one hand, the organization of small producers into producer cooperatives brought many of them into the category of "census" or large-scale enterprises; on the other hand, the difficulty of obtaining the necessary raw materials forced *kustari* and artisans to abandon their trades. Although the influx of people trying to make a living in industry caused the number of persons engaged in small-scale industry to be 23 per cent higher in 1928/29 than in 1913, in terms of full-time equivalents the number was 24 per cent lower because of a more than offsetting decline in the average work year (see Tables A-2 and A-3). Pushed out of the "traditional" small-scale trades, the *kustari* and artisans went into "new" trades, such as wood products, building materials, mineral fertilizers, etc. Studies carried out by Soviet economists for this period confirm this general picture. Out of 102 small-scale trades, fifteen (blacksmithies, metal processing, bakeries, macaroni production, flax weaving, tanneries,

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[8] Shops that employed three or more hired workers were considered "capitalist" enterprises.

[9] The data for small-scale industry, especially in the private and so-called capitalist sector, seem to be understated because to avoid excessive taxes the small-scale producers were inclined to underreport the volume of their business. For information on this, see Iu. Larin, "Chastnyi kapital v promyshlennosti" [Private Capital in Industry], *Ekonomicheskoe obozrenie* [Economic Survey], 1927, No. 7, and Nutter, *Industrial Production,* pp. 190 ff.

TABLE 9

PERCENTAGE DISTRIBUTION OF PERSONS ENGAGED IN SMALL-SCALE ENTERPRISES, BY TYPE OF OWNERSHIP, INDIVIDUAL INDUSTRIES, 1925 AND 1928/29

	TYPE OF OWNERSHIP				
				Private	
	All Types	State	Cooperative	With Hired Labor	Self-Employed
			1925		
All industries (excl. logging and fishing)	100	1	5	10	84
Minerals	100	2	11	11	76
Metals	100	1	2	11	86
Machine building	100	1	3	4	92
Wood processing	100	1	2	5	92
Chemical industry	100	5	17	30	48
Food industry	100	3	12	21	64
Products of animal origin	100	7	5	12	76
Leather and fur products [a]	100	1	5	10	84
Cotton goods	100	—	2	9	89
Woolen goods	100	—	1	5	94
Silk goods	100	3	7	30	60
Linen goods	100	1	2	5	92
Hemp and similar fibers	100	—	1	3	96
Mixed fibers	100	4	1	1	94
Garment industry	100	—	2	7	91
Shoe industry	100	—	2	6	92
Paper products	100	3	18	14	65
Printing	100	23	12	18	47
Musical instruments and *objets d'art*	100	2	3	7	88
			1928/29		
All industries (excl. logging and fishing)	100	4	21	1	74
Minerals	100	11	21	1	67
Metals	100	5	15	1	79
Machine building	100	6	14	1	79
Wood processing [b]	100	4	17	1	78
Chemical industry	100	4	30	2	64
Food industry [c]	100	6	44	1	49
Products of animal origin	100	15	24	8	53
Leather and fur products [d]	100	3	18	1	78
Cotton goods	100	4	59	1	36
Woolen goods	100	2	12	—	86
Silk goods	100	1	55	2	43
Linen goods	100	n.a.	n.a.	n.a.	n.a.
Hemp and similar fibers	100	2	17	—	81
Mixed fibers	100	4	52	2	42
Garment industry	100	n.a.	n.a.	n.a.	n.a.
Paper products	100	n.a.	n.a.	n.a.	n.a.
Printing	100	n.a.	n.a.	n.a.	n.a.
Musical instruments and *objets d'art*	100	4	21	1	74

SOURCE: 1925: *Statisticheskii spravochnik SSSR za 1927 god* [USSR Statistical Handbook for 1927], Moscow, 1927, p. 239; 1928/29: *Melkaia promyshlennost'*, vol. I, pp. 2–13.

[a] Excludes shoes.

[b] Excludes chemical wood processing.

[c] Excludes flour milling, grain cracking, and the vegetable industry.

[d] Includes shoes.

TABLE 10

Percentage Share of Persons Engaged and Gross Value of Output Accounted for by Small-Scale Enterprises, Industrial Groups, 1926/27–28/29

Industry	Persons Engaged [a]			Gross Value of Output		
	1926/27	1927/28	1928/29	1926/27	1927/28	1928/29
Ferrous and nonferrous metals [b]	—	—	—	—	—	—
Fuel	—	—	—	—	—	—
Electric power stations	—	—	—	—	—	—
Chemicals [c]	25	35	29	8	10	9
Rubber and asbestos	—	—	—	1	1	1
Machine building and metal products [d]	34	33	26	14	16	13
Logging, wood and paper industry	74	77	74	60	57	55
Logging	100	100	100	100	100	100
Wood and paper industry	51	59	51	23	25	23
Construction materials [e]	11	27	21	11	15	15
Cement	—	—	—	1	2	2
Bricks and other construction materials	22	43	34	25	32	32
Glass	—	—	—	2	3	3
Other mineral construction materials	27	51	36	12	17	17
Printing	9	34	6	19	19	16
Textiles and allied products	50	50	44	28	25	21
Cotton ginning	—	—	—	—	—	—
Cotton textiles	11	10	9	3	3	4
Primary processing of mixed fibers	—	—	—	7	12	12
Processing of flax	9	2	2	2	2	2
Wool industry	51	58	53	14	17	17
Silk industry	41	47	36	20	23	22
Hemp and jute industry	56	58	50	19	21	21
Knitted goods	73	70	54	35	28	22
Felt products	—	—	—	78	74	64
Garment industry	85	81	66	71	61	45
Natural and artificial leather	49	52	42	35	29	19
Fur industry	91	81	76	70	61	56
Boots and shoes, production and repair	92	87	76	78	68	49
Food and allied products	63	60	58	46	44	43
Food excluding fishing	49	49	42	44	42	41
Flour and groats	71	75	66	62	63	64
Beet sugar	—	—	—	—	—	—
Confectionery	45	48	40	37	31	25
Vegetable oil	59	59	53	36	30	24
Starch and syrup	20	40	33	14	26	22
Wine, vodka, cognac, and yeast	20	—	—	1	2	2
Beer and malt	—	—	—	—	1	1
Tobacco and makhorka	—	—	—	1	1	1
Salt	—	—	—	—	—	—
Grease, soap, and tallow	47	21	14	15	10	6
All others	69	69	60	60	54	47

(continued)

TABLE 10 (concluded)

Industry	Persons Engaged [a]			Gross Value of Output		
	1926/27	1927/28	1928/29	1926/27	1927/28	1928/29
Fishing	100	87	87	100	87	87
All others [f]	26	59	39	27	30	27
Total	43	45	40	31	29	27

SOURCE: Tables A-2 and A-3. Industrial groups rearranged as indicated in footnotes.

[a] Persons engaged measured in full-time equivalents.

[b] Includes ore mining.

[c] Excludes rubber and asbestos, which are in a separate group.

[d] Excludes repair shops.

[e] Excludes china and pottery, which are included in all others, and asbestos, which is covered separately above.

[f] Includes china and pottery and artificial gas.

— negligible.

garment industries, etc.) showed a decline in employment of 358 thousand between 1926/27 and 1928/29; the rest showed an increase of 1,078 thousand.[10]

Summary

After a sharp decline in output during the civil war, small-scale industry recovered quickly in the early years of the NEP, approaching its prerevolutionary level by 1926/27. This recovery proceeded at a quicker rate in the rural *kustar'* industry than in the urban artisan industry. Basically, no great changes occurred in the technical and economic characteristics of the small-scale industry between the prerevolutionary period and 1926/27. It was concentrated in consumer goods sectors and it was the main supplier of such commodities as shoes, miscellaneous wood products, felt products, products of the garment industry, and foodstuffs (grain and bread, vegetable oil, milk products). Just as in the prerevolutionary period, a considerable part of small-scale industry was concentrated in specific regions, specializing in the production of specific items which were supplied to a larger market. These "nest" industries were gradually absorbed by large-

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[10] Tikhomirov in *Vestnik promyslovoi kooperatsii,* 1931, No. 8, p. 3. For the same fifteen trades, the gross value of output declined by 513 million rubles between 1926/27 and 1928/29, while the gross value of output of "new" small-scale industries (wood products, peat and phosphate extraction, and repair trades) increased by 1,103 million rubles.

TABLE 11

Percentage Distribution of Persons Engaged and Gross Value of Output of Small-Scale Industry Among Industrial Groups, 1926/27–28/29

Industry	Persons Engaged [a]			Gross Value of Output		
	1926/27	1927/28	1928/29	1926/27	1927/28	1928/29
Ferrous and nonferrous metals [b]	—	—	—	—	—	—
Fuel	—	.1	.1	—	—	—
Electric power stations	—	.1	.1	—	—	—
Chemicals [c]	.7	1.0	.9	.4	.5	.6
Rubber and asbestos	—	—	—	—	—	—
Machine building and metal products [d]	9.9	9.0	8.2	4.2	4.7	4.9
Logging, wood and paper industry	22.8	24.4	28.0	17.8	16.6	17.6
Logging	14.3	13.7	17.8	14.3	12.7	13.5
Wood and paper industry	8.5	10.7	10.2	3.4	3.9	4.1
Construction materials [e]	.9	2.5	2.3	.8	1.1	1.3
Cement	—	—	—	—	—	—
Bricks and other construction materials	.6	1.5	1.4	.6	.8	.9
Glass	—	—	—	—	—	—
Other mineral construction materials	.3	1.0	.8	.1	.2	.3
Printing	.4	1.6	.3	.9	1.0	1.0
Textiles and allied products	42.2	39.5	37.0	31.2	28.8	25.8
Cotton ginning	—	—	—	—	—	—
Cotton textiles	3.0	2.6	2.4	1.2	1.5	1.7
Primary processing of mixed fibers	—	—	—	—	—	—
Processing of flax	.4	.1	.1	—	—	—
Wool industry	3.7	4.4	4.0	1.4	1.7	2.0
Silk industry	.3	.7	.6	.4	.5	.7
Hemp and jute industry	1.2	1.4	1.2	.3	.4	.4
Knitted goods	2.3	3.0	2.5	1.0	1.0	1.0
Felt products	—	—	—	1.8	1.7	1.6
Garment industry	13.3	13.7	9.7	10.6	9.6	8.4
Natural and artificial leather	1.9	2.0	1.6	3.9	2.9	2.0
Fur industry	1.5	.9	1.1	1.1	1.4	1.6
Boots and shoes, production and repairs	14.5	10.7	10.7	9.3	7.7	6.1
Others	.1	—	3.2	—	—	—
Food and allied products	22.1	20.0	21.4	43.5	45.9	47.2
Food excluding fishing	12.4	11.7	9.7	39.6	42.2	43.2
Flour and groats	5.6	5.2	3.5	26.8	28.8	29.6
Beet sugar	—	—	—	—	—	—
Confectionery	.7	.8	.8	1.1	1.2	1.3
Vegetable oil	.8	.8	.8	1.3	1.3	1.2
Starch and syrup	—	.1	.1	—	.1	.2
Wine, vodka, cognac, and yeast	.4	—	—	—	.1	.1
Beer and malt	—	—	—	—	—	—
Tobacco and makhorka	—	—	—	—	—	—
Salt	—	—	—	—	—	—
Grease, soap, and tallow	.4	.1	.1	.5	.4	.3
All others	4.4	4.7	4.5	9.7	10.3	10.5

(continued)

TABLE 11 (concluded)

Industry	Persons Engaged [a]			Gross Value of Output		
	1926/27	1927/28	1928/29	1926/27	1927/28	1928/29
Fishing	9.7	8.3	11.6	3.9	3.7	4.0
All others [f]	.9	2.0	1.9	1.0	1.2	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Tables A-2 and A-3. Industrial groups rearranged as indicated in footnotes.

[a] Persons engaged measured in full-time equivalents.

[b] Includes ore mining.

[c] Excludes rubber and asbestos which are in a separate group.

[d] Excludes repair shops.

[e] Excludes china and pottery, which are included in all others, and asbestos, which is covered separately above.

[f] Includes china and pottery and artificial gas.

— negligible.

Detail may not sum to total because of rounding.

scale industry even before the Plan era. Shortage of industrial raw materials (leather, wool, textiles) brought an early decline of the "traditional" small-scale industries, which resulted in a sharp reduction of the work year compared to the prewar period. Most small-scale shops were privately owned in the pre-Plan period, although after 1925 the number of state and cooperative owned and operated small-scale shops increased.

CHAPTER 5

The Absorption of Small-Scale Industry in the Plan Period

Administrative Reorganization of Small-Scale Industry

IN the initial draft of the First Five Year Plan introduced in 1929, the entire small-scale industry was left outside the jurisidiction of state-planned and state-controlled industry. Concentrating the industrialization drive on certain key branches of heavy industry, the planners ignored temporarily not only the *kustar'* and artisan industry but even some important and more developed industries that were closely connected with agriculture. Thus, the five year plan for the food industry did not cover fishing, milk processing, or meat packing because these industries were considered part of agriculture.[1]

In the process of industrialization the scope of planning was enlarged, and a tentative plan [2] was drawn up to organize some of the self-employed *kustari* and artisans in the RSFSR into producer cooperatives, 46 per cent of all *kustari* in the RSFSR to be so organized by 1932/33.[3] But this comparatively "modest" goal was overfulfilled long before the end of the First Five Year Plan. The "census" distinction between large- and small-scale industry was declared obsolete and entirely unwarranted. One Soviet specialist in small-scale industry argued that "the vestiges of this artificial distinction should soon be completely liquidated. In industrial production the notion of 'small-scale,' '*kustar'*,' and 'large-scale' industry must be done away with. All industrial production will be included in the accounting and control system regardless of type of ownership or whose administrative, operative, and planning jurisdiction it is under." [4]

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[1] *Piatiletnii plan sel'skokhoziaistvennoi i pishchevoi promyshlennosti VSNKh SSSR na 1928/29–1932/33 gody* [The Five Year Plan for Agriculture and the Food Industry of the USSR *VSNKh* for 1928/29–32/33], Moscow, 1930, p. 3.

[2] *Materialy piatiletnego plana razvitiia kustarno-promyslovoi kooperatsii RSFSR, 1928/29–1932/33* [Materials on the Five Year Plan for the Development of *Kustar'* Producer Cooperatives in the RSFSR, 1928/29–32/33], Moscow, 1930.

[3] *Kontrol'nye tsifry piatiletnego plana narodnogo khoziaistva i sotsial'no-kul'turnogo stroitel'stva RSFSR, 1928/29–1932/33* [Control Figures for the Five Year Plan for the National Economy and Social-Cultural Development of the Russian Republic, 1928/29–32/33], Moscow, 1929, p. 125.

The Soviet planners did not go so far as to eliminate the distinction between large- and small-scale industry entirely, but they did try to bring small-scale industry under the over-all centralized plan. By 1930 this drive was in full swing. The reorganization was accomplished through three principal channels. First, part of small-scale industry was organized into producer cooperatives (*promyslovye kooperativy*). These were mainly in the cities and embraced branches of light industry (such as apparel, textiles, knitted goods, shoes, leather, and felt), construction materials (such as bricks, lime, and shingles), and the extraction of minerals (such as peat and phosphate). The total membership of the producer cooperatives increased rapidly, from 865,000 on October 1, 1928, to 1,760,000 on January 1, 1931.[5] Many of these members were organized into producer cooperative shops; and, since most of these shops employed more than thirty workers, they automatically became incorporated into large-scale industry. The members of producer cooperatives working in shops increased in number as follows: [6]

1926	266,000
1929	465,000
1930	722,000
1931	1,134,000

By 1932 the majority of these shops came under the category of large-scale census enterprises.[7]

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[4] A. Senko, "Melkaia i kustarnaia promyshlennost' na putiakh sotsialisticheskoi rekonstrukstii" [Small-Scale and *Kustar'* Industry on the Road to Socialist Reconstruction] in *Puti industrializatsii* [Means of Industrialization], 1931, No. 5–6, p. 71.

[5] *Vsia kooperatsiia* [All Cooperatives], Moscow, 1929, p. 3, and Senko in *Puti industrializatsii,* 1931, No. 5–6, p. 73.

[6] *Promyslovaia kooperatsiia SSSR za 10 let, 1922–1932* [Producer Cooperatives in the USSR for Ten Years, 1922–32], Moscow, 1932, p. 2, and Senko in *Puti industrializatsii,* 1931, No. 5–6, p. 73.

[7] *Promyslovaia kooperatsiia,* p. 2. It is interesting to note that the taking over of producer cooperatives by state industry is still continuing. In 1956 cooperatives with a membership of 600 thousand were transferred to state enterprises (*Narodnoe khoziaistvo SSSR* [The National Economy of the USSR], Moscow, 1956, p. 203),

From 1931 on, a severe shortage of industrial raw materials (such as leather, cotton yarn, wool, and textiles) forced the Soviet government to cut down on the supply of these scarce materials to small-scale industry, even to the producer cooperatives. This undermined the work of the newly organized cooperatives in light industry. The producer cooperatives in the shoe industry, for instance, had made 16 million pairs of shoes in 1927/28; in 1931 they had to shift entirely to shoe repairing, and production of new shoes became a monopoly of state industry. Similarly, 19,000 tons of cotton yarn were manufactured by producer cooperatives in 1927/28; but by 1931 this production had become concentrated in state factories, along with the manufacture of cotton fabrics and ready-to-wear clothing.[8]

The small-scale food industry was initially organized into either consumer cooperatives (*potrebitel'skie kooperativy*) or agricultural cooperatives (*sel'skokhoziaistvennye kooperativy*). But, because of the acute shortage of food products (meat, milk, vegetable oil, etc.), the bulk of the food industry was very soon put under the direct control and operation of state trusts.

Two other channels of reorganizing small-scale industry were followed in rural areas. Some small-scale industries that satisfied the needs of collective farmers, such as flour milling and blacksmithing, became "collective farm industry" (*promyshlennost' kolkhozov*). At the same time attempts were made to organize the "nest" industries (see Chapter 4) into shops inside the collective farms. This resulted in the establishment of mixed collective farms that were both industrial and agricultural, the so-called "industrial collective farms" (*promkolkhozy*). Despite all the efforts of the Soviet planners, the number of these industrial collective farms remained small and even diminished over time, as can be seen from the following figures given for the beginning of each year: [9]

1933	2,428
1934	997
1935	857
1936	698
1937	536

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and again in 1960 producer cooperatives with a membership of 1.4 million were transformed into state-owned and state-operated enterprises (*Izvestia* [News], Jan. 26, 1961).

[8] Senko in *Puti industrializatsii*, 1931, No. 5–6, pp. 79 ff.

[9] *Vestnik sovetskoi torgovli* [Bulletin of Soviet Trade], 1938, No. 8–9, p. 53.

In 1938 the registration of *promkolkhozy* was dropped altogether.[10]

Collective farm industry, on the other hand, has been of more lasting importance. For 1933 and 1935 some data are available on industrial enterprises of collective farms in the RSFSR (see Table 12) which accounted for more than 70 per cent of all collective farms in those years. These enterprises produced a significant fraction of all flour,[11]

TABLE 12

COLLECTIVE FARM INDUSTRY IN THE RSFSR: NUMBER OF ENTERPRISES, EMPLOYMENT, AND VALUE OF OUTPUT, 1933 AND 1935

	1933			*1935*		
	Number of Enterprises	Number of Persons Engaged [a]	Gross Value of Output (million "1926/27" rubles)	Number of Enterprises	Number of Persons Engaged [a]	Gross Value of Output (million "1926/27" rubles)
Total	n.a.	n.a.	n.a.	299,250	644,920	1,362.1
Total excluding fishing, flour milling, and logging	101,690	221,209	339.5	197,238	397.721	604.1
Electric stations	122	201	0.1	541	822	0.5
Lime quarries	105	294	0.2	508	1,208	1.5
Brick yards	2,212	5,632	7.0	5,432	13,163	10.3
Blacksmithies	71,561	136,869	145.4	125,007	241,886	391.3
Transportation equipment	771	1,452	0.8	603	1,692	1.6
Furniture and wood products	6,772	17,341	4.4	20,067	50,924	55.0
Felt and felt shoes	3,605	5,970	14.2	7,689	10,903	24.7
Hemp products	296	14,422	2.0	1,078	21,547	4.2
Garment industry	361	826	1.1	455	1,081	2.3
Leather products	5,857	7,833	2.8	13,550	16,620	17.6
Leather shoes [b]	2,710	5,349	1.4	3,222	5,169	3.8
Dairy products, vegetables, and wine	680	1,497	8.5	1,061	1,772	14.7
Bakeries	2,008	3,670	6.4	5,918	8,067	25.5
China and shingles	355	802	2.1	723	1,845	2.4
Fishing	n.a.	n.a.	n.a.	5,299	133,900	5.4
Flour milling	n.a.	n.a.	n.a.	57,231	75,985	703.7
Logging	n.a.	n.a.	n.a.	39,482	37,322	48.9

SOURCE: Dubnikov and Ivanov in *Plan*, 1936, No. 20, p. 10.

[a] The number of persons engaged is not given in full-time equivalents, except for logging.

[b] Includes both production and repair of shoes.

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[10] After World War II the *promkolkhozy* were salvaged in some fishing areas. In 1953 there were 289 artels of *promkolkhozy* with a membership of 53,000 in the All Soviet Council of Producer Cooperatives (S. A. Gorelik, *Statistika* [Statistics], Leningrad, 1956, vol. II, p. 11). The total number of industrial collective farms in the postwar period was as follows (end-of-year figures): 1956—1.8 thousand, 1957—1.7 thousand, 1958—1.4 thousand, 1959—1.2 thousand (*Narodnoe khoziaistvo SSSR v 1959 godu* [USSR National Economy in 1959], Moscow, 1960, p. 423).

[11] Flour mills attached to collective farms accounted for about 50 per cent of the total capacity in flour milling in the middle 1930's (M. Dubnikov and A. Ivanov, "Promyshlennost' kolkhozov RSFSR" [Collective Farm Industry in the RSFSR], *Plan,* 1936, No. 20, p. 10).

bricks, lime, and shingles. After World War II, the number of these enterprises declined from about 425,000 to 350,000 because of the amalgamation of collective farms.[12]

Some small-scale industrial enterprises were transferred to local authorities, who operated them as local industries (*predpriiatiia rikov*). They have, however, been much less important than collective farm industrial enterprises. The gross value of their output in 1933 amounted to 242 million rubles (6.5 per cent of the total gross value of output of small-scale industry) compared with 2.1 billion rubles for the collective farm industrial enterprises (56 per cent).

Shift from Small- to Large-Scale Industry

The result of these structural and administrative changes in the initial years of the Plan period was a drastic decline in the statistically defined small-scale industry. In a single year, 1930, employment in a large segment of small-scale industry fell by about 430,000 full-time equivalents.[13] The sharpest decline occurred in traditionally small-scale products, such as textiles, garments, felt and felt shoes, and leather and leather shoes. The decline continued throughout the First Five Year Plan and into 1933 (see Table 13).

The data for 1933 and 1927/28 in Table 13 are not strictly comparable. The coverage of the former is narrower, some 400,000 (fewer in full-time equivalents) independent *kustari* and artisans—remnants of the private segment of industry—not being included. But even if we adjust the 1933 data to include these independent *kustari* and artisans, the trend is still quite clear. During the First Five Year Plan, employment in small-scale industry declined by 1.5 million persons in full-time equivalents. What happened to these people and to their industries?

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[12] *Narodnoe khoziaistvo,* 1956, p. 42, and *Narodnoe khoziaistvo v 1956 godu* [USSR National Economy in 1956], Moscow, 1957, p. 48.

[13] Basic data from *Melkaia promyshlennost' SSSR po dannym vsesoiuznoi perepisi 1929 goda* [Small-Scale Industry in the USSR According to Data from the All-Union Census of 1929], Moscow, 1932–33, vol. 1, Tables 6–8, pp. 18–19. In full-time equivalents, employment in small-scale industry excluding flour milling, logging, and fishing apparently fell from 1.6 million in 1929 to 1.2 million in 1930. Full-time equivalents were derived by multiplying the basic data for each industrial group by the ratio of the average number of weeks worked a year in each small-scale sector (*ibid.,* pp. 118 ff) to the average number of weeks worked a year in the corresponding large-scale group ("Itogi proizvodstva fabrichno-zavodskoi promyshlennosti SSSR za 1928/29" [Results of the Production of the USSR Factory Industry in 1928/29], *Statisticheskoe obozrenie* [*Statistical Review*], 1929, No. 12, pp. 88 ff).

TABLE 13

Persons Engaged in Small-Scale Industry, by Individual Industries, 1927/28 and 1933

Industry	*Thousand Full-Time Equivalents*		*Small-Scale as Percentage of Total*	
	1927/28	1933	1927/28	1933
Ferrous and nonferrous metallurgy	—	—	—	—
Fuel	2	—	—	—
Electric power	—	2	—	2
Chemicals	24	15	24	5
Machine building and metal products	217	16	33	1
Machine building	55	7	14	1
Metal products	162	9	60	2
Wood, paper, and logging	588	111	77	6
Plywood and lumber	—	5	—	2
Miscellaneous wood products	251	105	90	30
Matches	—	—	—	—
Pulp and paper	6	—	12	—
Logging	331	1	100	—
Construction materials	59	25	27	5
Cement	—	—	—	—
Bricks and other construction materials	36	16	43	10
Glass	—	—	—	—
Others	23	9	51	4
Printing	39	8	34	7
Textiles and allied products	951	200	50	10
Cotton ginning	—	—	—	—
Primary processing of fibers	—	—	—	—
Cotton fabrics	63	1	10	—
Linen fabrics	2	—	2	—
Woolen fabrics	105	29	58	23
Silk fabrics	16	—	47	—
Hemp and jute products	34	30	58	35
Knitted goods	73	36	70	19
Garment industry	331	3	81	8
Leather industry	48	1	52	2
Fur industry	22	2	81	5
Boots and shoes	257	44	87	16
Others		24		29
Food and allied products	481	189	60	17
Flour and groats	125	115	75	66
Sugar	—	—	—	—
Confectionery	20	6	48	9
Vegetable oil	20	7	59	26
Starch and syrup	2	1	40	7
Alcohol, wine, yeast, and vodka	—	—	—	—
Beer and malt	—	—	—	—
Tobacco and makhorka	—	—	—	—
Salt	—	—	—	—
Grease, tallow, and soap	3	3	21	11
Fishing	199	1	87	1
Others	112	56	69	14
Total	2,408	861	45	8

Source: Table A-2.
— negligible.

On the one hand, many handicraftsmen abandoned their trades and became workers in the newly organized state factories. On the other hand, a considerable part of small-scale industry was absorbed and incorporated into large-scale industry via producer cooperatives. Unfortunately, Soviet statistics do not provide the data needed to assess this "definitional" transfer of labor and equipment from small- to large-scale industry. Nevertheless, in an indirect way the shift may be measured by changes in, first, large- and small-scale employment and, second, in large- and small-scale production in a number of industries, such as the shoe, garment, knitted goods, and many food industries.

Small-scale employment rose between 1926/27 and 1927/28 in both total numbers and full-time equivalents. The latter considerably exceeded the concurrent increase in large-scale employment. From 1928/29 through 1931, small-scale employment remained rather stagnant while large-scale employment rose from 3.3 to 4.8 million.[14] This, according to Senko, was due, on the one hand, "to the tremendous demand for new labor in state large-scale industry" and, on the other, "to the mass transfer, via amalgamation, of small-scale industrial enterprises, with all their personnel and workers, to factory (census) industry." [15]

The same shift from small- to large-scale industry is evident in a study made by I. Berlin and Ia. Mebel' of the sources of the increased urban hired labor between 1927 and 1931 (see Table 14). A large part of the urban self-employed producers who became hired workers went into large-scale industry. Of the nearly 3 million rural inhabitants who joined the urban labor force, many undoubtedly were former *kustari* (blacksmiths, millers, etc.). It seems reasonable to suppose that half of both these groups (i.e., 2 million people) were former *kustari* and artisans. This would imply that half of the 1927 employment in small-scale industry was shifted into large-scale industry between 1927 and 1931.

A similar picture emerges from an examination of more detailed data on increase in employment in the large-scale segments of specific industries (see Table 15). The greatest increases are for the industries in which the share of large-scale employment in 1928 was the lowest.

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[14] Senko in *Puti industrializatsii,* 1931, No. 5–6, p. 74.

[15] *Ibid.,* pp. 74 f.

TABLE 14

Recruitment of Urban Hired Labor by Source, 1927–31

	Thousand Persons	Per Cent of Total
Current urban labor force		
Unemployed	460	7
Self-employed	1,164	17
Others	371	5
Urban entrants into labor force	2,073	30
Rural entrants into labor force	2,817	41
Total net recruitment	6,885	100

Source: I. Berlin and Ia. Mebel', "Strukturnye sdvigi v naselenii i proletariate" [Structural Changes in the Population and the Proletariat], *Voprosy truda* [Labor Problems], 1932, No. 11–12, p. 23. According to the same source, the influx of the rural working population into urban settlements in 1927–32 amounted to 6.5 million persons and, if members of their families are included, to over 10 million.

TABLE 15

Persons Engaged in Large-Scale Sector of Selected Industries, 1927/28 and 1933

	Thousand Full-Time Equivalents		1933 as Percentage of 1927/28	*Large-Scale as Percentage of Total*	
	1927/28	1933		1927/28	1933
Light Industry					
Garment industry	79	403	510	19	92
Leather, fur, and shoe industry	89	327	367	21	87
Knitted goods	31	156	503	30	81
Woolen fabrics	77	97	125	42	77
Cotton ginning	5	16	320	n.a.	100
Silk fabrics	18	25	139	53	100
Hemp and jute products	25	56	224	42	65
Miscellaneous wood products	29	249	859	10	70
Food Industry					
Flour milling	42	59	140	25	34
Confectionery	22	58	264	52	91
Grease, tallow, and soap	11	24	218	79	89
Starch and syrup	3	14	467	60	93

Source: Table A-2.

Absorption of Peasant Home Industry into State Industry

Another important structural change in the First Five Year Plan was the shifting of some traditionally agricultural activities to "industry." In its effect on statistics, this meant that some productive processes previously considered part of "agriculture" came to be included under industry.

As in many underdeveloped countries, the scope of economic activity of the Russian peasantry in the pre-Plan period went beyond agriculture proper, i.e., plant cultivation and animal husbandry. Some activities, although they furnished a nonagricultural product, were so closely associated with the peasantry that they were considered an integral part of "agriculture" in its broader meaning. This applied to fishing, hunting, procuring of firewood, and logging. It was customary for Soviet statistical sources to include the output of these "industries" in agricultural statistics.[16] According to estimates of B. Gukhman, the value of output in these quasi-agricultural activities amounted to around 11 per cent of the value of output of industry as customarily defined.[17] In addition to these quasi-agricultural pursuits, the peasantry, as the main source of agricultural raw materials, processed a large portion of both foods and technical crops in home industries and in rural small-scale industrial units. Examples of such work are primary flax and hemp processing, cotton ginning, wool washing and felt processing, cattle slaughtering, leather tanning, processing of butter and cheese, pressing of vegetable oil, etc. Finally, the Russian peasantry supplied a large part of the industrial labor force for some seasonal industries outside their villages, such as peat extraction, quarrying, brick making, etc.[18]

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[16] See, for example, *Narodnoe khoziaistvo SSSR* [USSR National Economy], Moscow, 1932, p. 5.

[17] B. Gukhman, "Dinamika proizvodstva" [Dynamics of Production], *Ekonomicheskoe obozrenie* [Economic Survey], 1929, No. 9, p. 114.

[18] Soviet statisticians have made some attempts to assess the industrial activities of the peasantry and their weight in the total economic activity of the rural population. S. G. Strumilin (*Problemy ekonomiki truda* [Problems of Labor Economics], Moscow, 1957, p. 253) computed such measures in terms of annual hours of productive work per member of a peasant family. Basing his estimate on data furnished by an investigation of Voronezh *oblast'*, carried out in June 1923, Strumilin concluded that 78.5 per cent of labor was spent on agriculture and husbandry proper, and 21.5 per cent in home industrial activities, of which 2.5 per cent was for procuring of firewood, 18.4 per cent for spinning and looming of textiles, 0.5 per cent for butter churning, and 0.1 per cent for making other products to be sold on the market.

Practically all the food consumed by the Russian population in the pre-Plan period was a product of agriculture proper or was processed by a dispersed, decentralized rural industry, which was in part inseparable from peasant home industry. On the eve of the Plan period, only a few branches of the food industry had reached the stage of factory production and were under state control: alcohol and vodka, beer, sugar, tobacco and cigarettes, the larger flour mills, and part of the canned food industry. This does not mean that many other branches of the food industry did not exist. Being dispersed in small-scale enterprises, in a considerable part privately owned or closely connected with agriculture or trades, the output of these industries was not statistically recorded or included in the computation of industrial output.

In 1929–30, the situation changed radically. A centralized, state-controlled food industry, with many specialized branches, sprang into existence. One after another, existing shops were taken over and amalgamated into larger industrial units by state trusts for milk, meat, and butter and centralized procurement agencies for hides, flax, wool, and hemp. Flax scutching, butter churning, and cattle slaughtering actually became monopolies of the state, forbidden to private peasants. Instead of the ten branches it had at the beginning of the Plan period, the state-controlled food industry had more than twenty by the end of 1932. Out of the 22,410 enterprises listed by the Central Statistical Administration (*TsSU*) in 1927 (excluding the smaller *kustar'* enterprises), 4,582 (20 per cent) were owned by the state, 6,257 (30 per cent) by different types of cooperatives, and 11,476 (50 per cent) by private enterprise. In 1931 the total number of food enterprises registered by *TsSU* declined to 13,677, of which 4,458 (33 per cent) belonged to the state, 7,656 (56 per cent) to cooperatives, and only 1,422 (10 per cent) to private owners.[19]

A great part of the increase in industrial output resulting from the shift of activities from agriculture to industry was a change in form rather than in substance. Production previously not counted statistically accounted for a considerable increase, which created a paradoxical situation. Over 1928–32, a time of acute food shortage resulting from collectivization of agriculture and culminating in the famine of 1931–32, the Soviet indexes for the food industry show percentage increases that sometimes surpass the most rapidly developing heavy industries. It may be reasoned that there is a net gain from the development of modern meat-packing enterprises, mechanized factories, vegetable oil factories, etc., that produce, with less effort and labor, products previously produced within the home economy of millions of peasant families, and that this gain should be reflected in the overall industrial index. But during the First Five Year Plan the organizational shift was not so much technological as definitional.

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[19] *Pishchevaia promyshlennost'* [The Food Industry], 1932, No. 7–8, p. 28.

For the period 1928–32, the official Soviet production index shows a rise of 63 per cent[20] for the entire food industry and of 81 per cent for the large-scale segment.[21] But during these five years, there was an increase in physical output among food and allied products only in the cases of macaroni, salt, canned food, beer, cigarettes, vodka, and candy (see Table 16). According to the NBER production indexes, output of all food and allied products, weighted by 1928 prices, increased by only 13 per cent, and that figure does not take account of the depreciation in quality over this period.[22]

TABLE 16

PHYSICAL OUTPUT OF FOOD AND ALLIED PRODUCTS, 1928 AND 1932

Product	Unit	Output in 1928	Output in 1932	Change (per cent)
Flour	mill. m.t.	24	20	−17
Macaroni	th. m.t.	47	185	+294
Butter	th. m.t.	82.1	71.4	−13
Vegetable oil	th. m.t.	620	490	−21
Meat	th. m.t.	678	483	−29
Soap	th. m.t.	360	357	−1
Salt	th. m.t.	2,336	2,636	+13
Raw sugar	th. m.t.	1,283	828	−35
Canned food	mill. cans	125	692	+454
Beer	th. hectolit.	3,907	4,210	+8
Cigarettes	billions	49.5	57.9	+17
Makhorka	th. crates	4,293	3,274	−24
Vodka	mill. decalit.	55.5	72.0	+30
Candy	th. m.t.	103	296.6	+188

SOURCE: G. Warren Nutter, *Growth of Industrial Production in the Soviet Union*, Princeton for NBER, 1962, Table B-2.

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[20] *Promyshlennost' SSSR* [Industry of the USSR], Moscow, 1957, p. 367.

[21] *Sotsialisticheskoe stroitel'stvo,* 1936, p. 16.

[22] G. Warren Nutter, *Growth of Industrial Production in the Soviet Union,* Princeton for NBER, 1962, Table 17 and pp. 67 ff.

The Plan Period

Summary

As a corollary to the collectivization of agriculture, Soviet small-scale industry was subjected to the over-all national plan in the initial period of the First Five Year Plan. Three main methods of reorganization were applied to small-scale industry. Some small-scale shops, mainly in the light industry (shoes, garments, knitted goods, etc.), were reorganized into producer cooperatives, many of which through agglomeration came under the jurisdiction of large-scale industry. Small enterprises in some specific industries (flour milling, blacksmith shops) were transferred to collective farms as collective farm industry; and finally some villages in which agricultural activity was connected with *kustar'* industry were organized as industrial collective farms. The reorganization of the food industry and the primary processing of agricultural products (wool, flax, hides) took a somewhat different form. Contrary to the past when agricultural activity included the production of some food products (cattle slaughtering, butter churning, flax processing, etc.), agriculture was now strictly limited to plant cultivation and animal husbandry, and food processing became an actual monopoly of the state, predominantly large-scale industry. The reorganization of small-scale light industry into producer cooperatives, on the one hand, and the enlargement of the scope of industry by including within its bounds the processing of agricultural products which previously had not been statistically counted, on the other, facilitated the absorption of a substantial part of small-scale industry into large-scale industry.

CHAPTER 6

Indexes of Small-Scale Production

The Data Problem

THERE are many difficulties involved in constructing a reliable production index for Soviet small-scale industry, not the least being the scarcity of data on physical output. As mentioned earlier, such data were rarely published even though they had been collected, as in the census for 1928/29. In the Soviet statistical abstracts published within the last few years, the figures on output are said to apply to all industry, and it would therefore seem to be possible to derive small-scale output as the difference between these data and those published in earlier abstracts for large-scale industry only. Unfortunately, the matter is not so simple because in a number of important cases total output for pre-Plan and early Plan years has been significantly understated in the recent abstracts. Some examples are soap, beer, boots and shoes, silk fabrics, woolen and worsted fabrics, and timber haulage.[1]

Through several methods of estimation, we have gathered together physical data on small-scale output for fifty-eight products, covering the years 1913, 1927/28, and 1933 (see Tables A-4 and A-5). Some important activities of the small-scale sector involving diversified and custom-made products, like tailoring and dressmaking, are not covered because of insoluble problems in measuring physical output, given the available information.[2] In the case of those products for which output has been estimated, production within home ("cottage") industry is largely not included. Finally, for a number of products whose physical output could have been measured more or less adequately (such as sheepskin coats, sleds, buggies, axes, and barrels), production records were never kept, so that they cannot be included in a production index.

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[1] See notes in *Statistical Abstract of Industrial Output in the Soviet Union, 1913–1955,* New York, NBER, 1956, Parts 3 and 4.

[2] According to data compiled by A. A. Rybnikov, who spent a lifetime studying the prerevolutionary *kustar'* industry, 12 per cent of the value of output of all industry in 1913 was accounted for by industries whose production was organized predominantly on a small-scale basis and whose products were so diversified that

In brief, the output record one must work from is, to say the least, highly deficient in many important respects. Nevertheless, it does provide a basis for estimating over-all trends in small-scale production through index numbers, and we turn now to see what those index numbers show.

Index of Industrial Materials

In his study of Soviet industrial growth, G. Warren Nutter uses, as one of his indicators of growth, a production index covering fifty-four staple industrial materials and basic consumer goods, each product being weighted by its price net of the cost of nonindustrial materials consumed in its fabrication.[3] Since our data on the physical output of small-scale industries cover these fifty-four commodities, it is possible to construct similar production indexes for both the large- and small-scale sectors. This we have done, using 1927/28 unit values as weights, for 1913, 1927/28, and 1933 (see Table 17).

According to these indexes, the total output of industrial materials increased by 37 per cent between 1913 and 1933, composed of an increase of 83 per cent in the large-scale sector and a decline of 68 per cent in the small-scale sector.[4] The share of the small-scale sector in the net production of these materials, evaluated in 1927/28 prices, went down from 31 per cent in 1913 to 26 per cent in 1927/28 and finally to 7 per cent in 1933. These percentages correspond closely to our estimates of the percentages of the gross value of output of all industry accounted for by the small-scale sector in the three respective years (see Table A-3).

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output could not be expressed in homogeneous physical units. See A. A. Rybnikov, "Osnovye tendentsii evoliutsii form promyshlennosti voobshche i melkoi promyshlennosti v osobennosti" [The Basic Tendencies of the Evolution of the Forms of Industry in General and of Small-Scale Industry in Particular], *Ekonomicheskoe obozrenie* [Economic Survey], 1927, No. 7, pp. 132 f.

[3] See G. Warren Nutter, *Growth of Industrial Production in the Soviet Union,* Princeton for NBER, 1962, pp. 118 ff.

[4] Over 1927/28–33, Hodgman's index of large-scale production shows an increase of 78 per cent in the "unadjusted" version and 92 per cent in the "adjusted" version (see Donald Hodgman, *Soviet Industrial Production, 1928–1951,* Cambridge, Mass., 1954, p. 73). Our index for industrial materials in the large-scale sector shows an increase of 71 per cent over the same period.

TABLE 17

PRODUCTION INDEX FOR INDUSTRIAL MATERIALS: LARGE- AND SMALL-SCALE INDUSTRY, 1913, 1927/28, AND 1933

	Net Value of Output			*Index Numbers*		
	Large-Scale	Small-Scale	Total	Large-Scale	Small-Scale	Total
	(million rubles, 1927/28 prices)			(1913 = 100)		
1913	3,842	1,694	5,536	100	100	100
1927/28	4,103	1,454	5,557	107	86	100
1933	7,028	540	7,568	183	32	137

SOURCE: Table A-6.

TABLE 18

INDEXES OF OUTPUT, PERSONS ENGAGED, AND OUTPUT PER PERSON ENGAGED: TOTAL, LARGE-SCALE, AND SMALL-SCALE INDUSTRY, 1927/28 AND 1933 (1913 = 100)

	1927/28	1933
	TOTAL INDUSTRY	
Output [a]	100	137
Persons engaged [b]	93	173
Output per person engaged [c]	109	79
	LARGE-SCALE INDUSTRY	
Output [a]	107	183
Persons engaged [b]	104	318
Output per person engaged [c]	103	58
	SMALL-SCALE INDUSTRY	
Output [a]	86	32
Persons engaged [b]	82	29
Output per person engaged [c]	105	110

[a] Measured by industrial materials. From Table 17.
[b] Measured in full-time equivalents. From Table A-2.
[c] Index of output divided by index of persons engaged.

Indexes of Small-Scale Production

The production indexes may be combined with our data on employment to provide measures of changes in labor productivity over this early part of the Soviet period (Table 18). Output per person engaged rose in both large-scale and small-scale industry over 1913–27/28,[5] but it moved in opposite directions over 1927/28–33, falling by 46 per cent in large-scale industry but rising by 5 per cent in small-scale industry. This divergent behavior may be partly illusory, resulting from a shift of industries with relatively low productivity from the small-scale to the large-scale sector. But in large part it reflects a genuine lowering of labor productivity as persons were almost poured into existing factories. This is shown by the fact that output per person engaged in the total production of industrial materials fell by 28 per cent.[6] During the next four years, 1933–37, labor productivity rose sharply as new plants and equipment were brought into operation and the relatively unskilled work force was assimilated.[7]

Soviet Indexes of Small-Scale Production

Reversing their previous policy, Soviet statistical authorities recently published two official indexes of gross industrial production, one for large-scale industry and the other for all industry.[8] On the basis of these two official indexes and the known breakdown of gross value of output for 1933 in "1926/27" rubles (42,261 million for large-scale industry and 45,955 million for all industry[9]), we can reconstruct the gross production in "1926/27" rubles[10] for both large-scale and all industry for every year from 1913 through 1950. By subtracting one from the other, we can obtain the gross production of small-scale industry. The results of these computations are presented in Tables 19, 20, and 21 below. The derived gross production of large-scale industry seems to be accurate, since the derived figures for 1928–37 are almost

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[5] The rise for total industry exceeded that for either sector. This seemingly paradoxical result can occur because output is measured by a weighted index whereas persons engaged are measured by an unweighted one.

[6] For all industry, the decline was only 7 per cent and in man-hour productivity there was a slight rise (see Nutter, *Industrial Production,* Table 40).

[7] See *ibid.,* Table 40.

[8] See *Promyshlennost' SSSR* [Industry of the USSR], Moscow, 1957, p. 31.

[9] Data from the 1933 industrial census, given separately for large- and small-scale industry, were published in *SSSR v tsifrakh* [The USSR in Figures], Moscow, 1935, pp. 7-11, and *Plan,* 1935, No. 7, pp. 41-49. For coverage and details of this census, see Chapter 2.

[10] The constant "1926/27" prices used as weights in constructing the official Soviet index vary for identical products in different enterprises, especially in the late 1920's and early 1930's. For the products of small-scale industry, 1932 prices were used, reduced by a system of coefficients to the level of 1926/27 prices. Not before 1936 were the "1926/27" prices brought into a uniform system of prices, but even at this time many new products were evaluated on the basis of the much higher current production cost rather than in "1926/27" prices. (See A. T. Ezhov, *Statistika promyshlennosti* [Industrial Statistics], Moscow, 1957, p. 82.) For further comments, see Nutter, *Industrial Production,* pp. 152 ff.

TABLE 19

DERIVED GROSS PRODUCTION OF LARGE- AND SMALL-SCALE INDUSTRY, 1913–50
(billion "1926/27" rubles)

	All Industry [a]	Large-Scale Industry [a]	Small-Scale Industry [b]
1913	16.4	11.1	5.3
1917	11.6	7.0	4.6
1921	5.1	2.3	2.7
1924	7.4	5.1	2.3
1925	11.9	8.3	3.6
1926	16.0	12.0	4.0
1927	18.2	13.5	4.6
1928	21.6	16.9	4.7
1929	25.8	21.1	4.8
1930	31.6	27.6	3.9
1931	38.1	34.1	4.1
1932	43.7	39.0	4.6
1933	46.0	42.3	3.7
1934	54.8	50.7	4.1
1935	67.2	62.4	4.8
1936	86.5	81.3	5.2
1937	96.2	90.5	5.6
1938	107.4	101.0	6.4
1939	124.8	116.6	8.2
1940	139.3	130.0	9.3
1945	127.9	120.3	7.5
1946	106.6	98.5	8.1
1947	130.0	120.6	9.4
1948	164.0	152.2	11.8
1949	196.6	183.7	12.9
1950	241.7	228.5	13.2

[a] Computed from gross value of output in 1933 and indexes in *Promyshlennost' SSSR*, 1957, p. 31. See text.

[b] All industry minus large-scale industry.

TABLE 20

OFFICIAL SOVIET INDEXES OF GROSS PRODUCTION, LARGE- AND SMALL-SCALE INDUSTRY, 1913–55 [a]

(1913 = 100)

	All Industry [b]	Large-Scale Industry [b]	Small-Scale Industry [c]
1913	100	100	100
1917	71	63	88
1921	31	21	52
1924	45	46	43
1925	73	75	69
1926	98	108	77
1927	111	122	88
1928	132	152	90
1929	158	190	91
1930	193	249	75
1931	233	307	77
1932	267	352	88
1933	281	381	70
1934	335	457	78
1935	411	563	91
1936	529	733	99
1937	588	816	107
1938	657	911	122
1939	763	1,051	156
1940	852	1,172	177
1945	782	1,085	143
1946	652	888	154
1947	795	1,087	179
1948	1,003	1,372	225
1949	1,202	1,656	245
1950	1,476	2,060	251
1951	1,718	2,411	
1952	1,917	2,705	
1953	2,143	3,045	
1954	2,428	3,461	
1955	2,729	3,915	

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[a] For 1924–30, years probably refer to fiscal years ending in the specified years.

[b] *Promyshlennost' SSSR*, 1957, p. 31.

[c] Derived from Table 19.

TABLE 21

PERCENTAGE SHARES OF GROSS PRODUCTION IN "1926/27" PRICES ACCOUNTED FOR BY LARGE- AND SMALL-SCALE INDUSTRY ACCORDING TO OFFICIAL SOVIET STATISTICS, 1913–50
(per cent)

	Large-Scale Industry	Small-Scale Industry
1913	68	32
1917	60	40
1921	46	54
1924	69	31
1925	70	30
1926	75	25
1927	74	26
1928	78	21
1929	82	18
1930	88	12
1931	89	11
1932	89	11
1933	92	8
1934	92	7
1935	93	7
1936	94	6
1937	94	6
1938	94	6
1939	93	7
1940	93	7
1945	94	6
1946	92	8
1947	93	7
1948	93	7
1949	93	7
1950	95	5

SOURCE: Table 19.

identical with ones published in earlier Soviet statistical sources, the differences between the two sets of figures exceeding 0.5 per cent in only one year (Table 22).

The derived official Soviet production index for small-scale industry shows a decline by 10 per cent between 1913 and 1927/28 and by 22

TABLE 22

COMPARISON OF DERIVED AND PUBLISHED DATA ON GROSS PRODUCTION OF LARGE-SCALE INDUSTRY, 1928–37
(million "1926/27" rubles)

	Published in Soviet Sources [a]	Derived [b]	Ratio of Derived to Published
1928	16,860	16,860	1.000
1929	21,204	21,075	.994
1930	27,699	27,619	.997
1931	34,159	34,053	.997
1932	38,831	39,044	1.005
1934	50,568	50,691	1.002
1935	62,129	62,449	1.005
1936	80,900	81,305	1.005
1937	90,200	90,512	1.003

[a] 1928–34: *Sotsialisticheskoe stroitel'stvo SSSR* [Socialist Construction in the USSR], Moscow, 1936, p. 2; 1935–37: *Sovetskaia sotsialisticheskaia ekonomika, 1917–1957* [The Soviet Socialist Economy, 1917–57], Moscow, 1957, p. 126.

[b] See Table 19.

per cent between 1927/28 and 1933, while our index declines by 14 and 63 per cent, respectively. In 1933, the official index of small-scale industry stands at 80 per cent of the 1913 level, while ours stands at 32 per cent. If our index can be accepted as more or less correct, the official Soviet index substantially understates the decline in small-scale production over this period. It is generally agreed by Western scholars that the official Soviet index seriously exaggerates growth in all industry,[11] and we may now add that the exaggeration applies to both the large- and small-scale sectors.

On this score, it is interesting to note that the official Soviet data show the share of small-scale industry in total gross production (in "1926/27" prices) as 32 per cent for 1913, 22 per cent for 1928, and 8 per cent for 1933 (see Table 21). The shares implied by our index of industrial materials (in 1927/28 prices) are 31, 26, and 7 per cent, similar to the data above. This evidence suggests, too, that whatever long-run upward bias there is in the official Soviet index applies equally to both the large- and small-scale sectors.

It should be kept in mind that the derived official Soviet index of small-scale production is certainly based on estimated values. As we have pointed out several times, the state of Russian statistics in 1913 and in the 1920's made it impossible to measure small-scale output accurately, especially in marginal, semi-industrial branches. The accuracy of official estimates for 1913 to 1928 may be checked by comparing them with estimates derived in different periods by other Soviet economists and statisticians.

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[11] On the upward bias implied in the Soviet index, see Nutter, *Industrial Production*, pp. 27 ff.

Gross output in 1913 amounted, according to the official Soviet index, to 11.1 billion "1926/27" rubles in large-scale industry and 5.26 billion in small-scale industry. In a recently published article, S. G. Strumilin gives data on the output of large- and small-scale industry in 1913 which differ from the official Soviet index. He estimates gross value of output as 10.25 billion "1926/27" rubles for large-scale industry (0.8 billion rubles fewer than the official data) and as 5.95 billion for small-scale industry (0.7 billion rubles more than the official data).[12] There is no doubt that Strumilin had access to all the official data and was aware of them. The discrepancy between his estimates and the official ones may be caused by different definitions of small- and large-scale industry or by different methods of re-evaluing gross value in current rubles into "1926/27" rubles. The coefficient used by Strumilin for both sectors is 182, with the 1913 price level taken as 100.[13] Deflating the data given by Strumilin by this coefficient, we obtain a gross value of output of 5.6 billion current rubles for large-scale industry and of 3.3 billion for small-scale industry. The latter is 4 per cent higher than our corresponding estimate, and the former is 10 per cent lower (see Table A-3). On these grounds, the official data would seem to be more consistent with our estimates than Strumilin's data.

However, Strumilin seems to make a countervailing error in using the same price level for both small- and large-scale industry. The price index for consumer goods in November 1927 was 198 per cent of 1913, whereas the price index for producer goods (the industrial index of the *VSNKh*) was 171 per cent. The price index of consumer goods sold in private trade was 230 per cent, even higher.[14] The consumer goods price index applies more appropriately to small-scale industry and the producer goods index to large-scale industry, though a mixture would be best in both cases, the weights of the two components varying. If our estimates for large- and small-scale gross value of output in 1913 (Table A-3) are inflated by the producer and consumer goods indexes, separately, the values in "1926/27" rubles become 10.4 billion for large-scale industry and 6.2 billion for small-scale industry. The large-scale figure lies between those of Strumilin and of the official index while the small-scale figure exceeds both. We are unable to say which of the three estimates—the estimative nature of all must be underlined—is best.

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[12] *Sovetskaia sotsialisticheskaia ekonomika,* pp. 120 ff.

[13] *Ibid.,* p. 123.

[14] *Ekonomicheskoe obozrenie,* 1928, No. 1, p. 178.

Summary

Limitation of material and paucity of data prevented us from constructing an all-inclusive index of small-scale industry for the years when it was important in the Soviet economy. An attempt, therefore, was made to determine the physical output of small-scale industry for the fifty-four staple industrial materials and basic consumer goods which were covered by the production index of industrial materials, constructed by G. W. Nutter. There is a considerable discrepancy between this index (see Table 17) and the official Soviet index reconstructed for large- and small-scale industry. While in our index large-scale production shows an increase of 83 per cent between 1913 and 1933 and small-scale production a decrease of 68 per cent, in the official Soviet index the former shows an increase of 281 per cent and the latter a decrease of only 30 per cent. But in spite of this discrepancy, the share of small-scale industry in total industrial output in our index is very close to the one in the official index. It is generally agreed among Western scholars that the official Soviet index suffers from an upward bias and it can now be said that this bias applies to large- as well as to small-scale industry.

Appendix

NOTE: In these appendixes the sources are cited by an italicized numbering code followed by the page number. The sources are arranged by that code in the bibliography at the end of the paper. In the case of articles, citations are given by an italicized number identifying the periodical or newspaper, followed by the year, issue, and page number.

Appendix

TABLE A-1

PERSONS ENGAGED IN SMALL-SCALE INDUSTRY: SOVIET UNION, SELECTED YEARS
(thousands[a])

Industry	1913	1926/27	1927/28	1928/29
I. Ferrous and nonferrous mining and metallurgy	3[b]	1	1	1
A. Extraction of ore		1	1	1
II. Fuel		—	5	4
A. Peat		—	n.a.	4
III. Electric power stations	—	—	—	—
IV. Chemicals	46	54	116	98
A. Paints and varnishes	n.a.	2	n.a.	2
B. Pharmaceutical chemicals	n.a.	—	n.a.	—
C. Chemical wood processing	37[c]	51	107	90
D. All other chemicals	n.a.	1	—	6
V. Machine building and metal products	349	427	536	431
A. Machine building	n.a.	50	140	105
1. Land transport. equip.	n.a.	—	n.a.	—
2. Shipbuilding	n.a.	2	n.a.	—
3. Agricultural machinery	n.a.	3	n.a.	74
4. Electrical and indus. machinery	n.a.	45	3	31
B. Metal products	n.a.	377	396	325
1. Ferrous metal products	n.a.	371	385	316
2. Nonferrous metal products	n.a.	6	11	9
VI. Wood products, paper, and logging	1,164	1,423	1,942	1,991
A. Plywood and lumber	—	17	29	26
B. Miscellaneous wood products	819	476	722	532
C. Pulp and paper	19[d]	7	9	7
D. Logging	826[e]	900[f]	1,000[g]	1,199[g]
E. Carts, sleds, and parts	—	23	182	157
F. Others	—	—	—	70
VII. Construction materials	159	68	167	198
A. Bricks and others	n.a.	43	142	128
B. Glass	n.a.	1	—	—
C. Cement	n.a.	1	—	—
D. Other construc. materials	n.a.	23	25	70
VIII. Printing	13	13	63	8
A. Printing and publishing	n.a.	n.a.	4	n.a.
B. Stationery and art equipment	n.a.	n.a.	59	n.a.
IX. Textiles	1,911	2,068	2,451	2,210
A. Cotton ginning	—	—	—	—
B. Primary processing of flax	—	—	—	—
C. Cotton fabrics		115	146	125
D. Linen fabrics		23	8	6
E. Woolen fabrics[h]	1,427[i]	290	427	358
F. Silk fabrics		16	32	27
G. Hemp and jute products		62	83	63
H. Processing of mixed fibers		16	48	41
I. Knitted goods		92	149	131
J. Garment industry		677	645	560
K. Leather industry		73	124	73
L. Fur industry	484	93	78	85
M. Boots and shoes (product. and repair)		607	624	557
N. Lace		—	63	149
O. Others		4	24	35

(continued)

TABLE A-1 (concluded)

Industry	1913	1926/27	1927/28	1928/29
X. Food and allied products	1,116	791	1,083	892
A. Flour and groats	345	328	566	345
B. Fishing	500 [j]	204 [k]	199 [l]	261 [l]
C. All other food	271	259	318	286
1. Confectionery	n.a.	19	32	28
2. Vegetable oil	n.a.	64	82	73
3. Starch and syrup	n.a.	4	12	10
4. Alcohol, wine, yeast, and vodka	n.a.	17	—	—
5. Tobacco and makhorka	n.a.	1	—	—
6. Grease, tallow, and soap	n.a.	14	5	4
7. Meat (incl. sausages)	n.a.	—	—	22
8. Dairy products	n.a.	25	46	40
9. Bakeries	n.a.	88	73	61
10. Others	n.a.	27	68	48
XI. All others	92 [m]	50	131	117
A. China and pottery	n.a.	46	50	46
B. Others	n.a.	4	81 [n]	71
Total	4,853	4,895	6,495	5,948

[a] In actual numbers, *not* in full-time equivalents.

[b] Includes all mining products.

[c] For 1912. From *13*, 52.

[d] Paper products.

[e] Persons engaged in full-time equivalents (Table A-2) doubled on the assumption that the average working season was 6 months in logging.

[f] Assumed to be 90% of no. of persons engaged in 1927/28.

[g] From *34*, 89. For 1927/28, includes 331.3 thous. in wood cutting and 668.3 thous. with their own horses and carts. For 1928/29, includes 387.2 thous. in wood cutting and 811.6 thous. with their own horses and carts.

[h] Includes felt and felt products.

[i] Includes lace and others.

[j] Estimated for 1913 in *1*, 28.

[k] From *72*, 126.

[l] Employment in 1926/27 extrapolated by fish catch (*48*, Table B-2).

[m] School supplies and other products.

[n] Includes materials of animal origin.

— negligible or nonexistent

SOURCE AND DERIVATION OF TABLE A-1

(Note: Exceptions to these general explanations are separately footnoted above.)

1913: Estimates of no. of persons engaged in "noncensus" industry in 1913 on interwar Soviet territory made by a special committee of the Central Statistical Administration (*2*, 91 ff).

1926/27: *81*, 482 ff. For additional breakdown, see *44*, 88 ff.

1927/28: Total no. of weeks worked in small-scale industry (*87*, 3) apportioned among industries according to percentage distribution for 1928/29 (*40*, 118 ff). For each industry, total no. of weeks worked was divided by avg. no. of weeks worked per worker in 1928/29 (*40*, 14 ff).

1928/29: *40*, 11 ff, and 118 ff.

Appendix

TABLE A-2

Persons Engaged in Large- and Small-Scale Industry in Full-Time Equivalents: Soviet Union, Selected Years
(thousand full-time equivalents)

Industry	1913	1926/27	1927/28	1928/29	1933
I. Ferrous and nonferrous mining and metallurgy	425	269	281	276	573
Large-scale	425	269	281	276	573
Small-scale	—	—	—	—	—
A. Extraction of iron ore	49	25	27	33	45
Large-scale	49	25	27	33	45
Small-scale	—	—	—	—	—
B. Extraction of manganese ore	7	10	6	11	8
Large-scale	7	10	6	11	8
Small-scale	—	—	—	—	—
C. Ferrous metallurgy	242	202	212	232	365
Large-scale	242	202	212	232	365
Small-scale	—	—	—	—	—
D. Nonferrous mining and metallurgy	127	32	36	n.a.	155
Large-scale	127	32	36	n.a.	155
Small-scale	—	—	—	—	—
II. Fuel	315	368	400	421	725
Large-scale	314	368	399	419	725
Small-scale	1 [a]	—	2	2	—
A. Coal and coke	208	278	283	303	494
Large-scale	208	278	283	303	494
Small-scale	—	—	—	—	—
B. Crude petroleum	47	43	41	36	31
Large-scale	47	43	41	36	31
Small-scale	—	—	—	—	—
C. Petroleum refining	7	8	8	9	54
Large-scale	7	8	8	9	54 [b]
Small-scale	—	—	—	—	—
D. Peat	52	39	67	73	146
Large-scale	52	39	65	71	146 [c]
Small-scale	—	—	2	2	—
III. Electric power stations	20	28	28	33	97
Large-scale	20	28	28	33	95
Small-scale	—	—	—	—	2
IV. Chemicals (incl. rubber)	70	77	100	98	279
Large-scale	56	63	76	77	264
Small-scale	14	14	24 [d]	21	15

(continued)

TABLE A-2 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
A. Basic chemicals	13	17	18	20	54
Large-scale	13	17	18	20	54
Small-scale	—	—	—	—	—
B. Paints and varnishes	n.a.	6	n.a.	6	10
Large-scale	n.a.	5	5	5	9
Small-scale	n.a.	1	n.a.	1	1
C. Pharmaceutical chemicals	n.a.	72	n.a.	5	72
Large-scale	n.a.	71	5	5	71
Small-scale	n.a.	1	n.a.	—	1
D. Rubber and asbestos	17	22	31	28	54
Large-scale	17	22	31	28	54
Small-scale	—	—	—	—	—
E. All other chemicals	40	27	17	39	89
Large-scale	26[d]	14	17[e]	19	76
Small-scale	14	13	—	20	13
V. Machine building and metal products	602	603	663	705	1,504
Large-scale	391	395	446	521	1,488
Small-scale	211	208	217	184	16
A. Machine building	303	296	391	415	811
Large-scale	250	276	336	371	804
Small-scale	53[f]	20	55	44	7
1. Land transport. equipment (incl. tractors)	n.a.	60	n.a.	79	355
Large-scale	n.a.	60	55	79	348
Small-scale	n.a.	—	n.a.	—	7
2. Shipbuilding	n.a.	29	n.a.	43	106
Large-scale	n.a.	28	42	43	106
Small-scale	n.a.	1	n.a.	—	—
3. Agricultural machinery (excl. tractors	n.a.	46	n.a.	94	110
Large-scale	n.a.	45	51	62	110
Small-scale	n.a.	1	n.a.	32	—
4. Electrical and industrial machinery	n.a.	161	n.a.	199	240
Large-scale	n.a.	143	188	187	240
Small-scale	n.a.	18	n.a.	12	—
B. Metal products	299	307	272	290	422
Large-scale	141	119	110	150	413
Small-scale	158[f]	188	162	140	9

(continued)

TABLE A-2 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
VI. Wood products, paper, and logging	1,073	650	768	846	1,798
Large-scale	176	172	180	218	1,687
Small-scale	897	478	588	628	111
A. Plywood and lumber	89	94	92	122	252
Large-scale	89	89	92	116	247
Small-scale	—	5	—	6	5
B. Miscellaneous wood products	498	192	280	251	354
Large-scale	27	23	29	34	249
Small-scale	471	169[h]	251[h]	217[h]	105
C. Matches	23	14	17	21	19
Large-scale	23	14	17	21	19
Small-scale	—	—	—	—	—
D. Pulp and paper	50	50	49	52	53
Large-scale	37	46	43	47	53
Small-scale	13[i]	4	6	5	—
E. Logging	413	300	331	400	1,120
Large-scale	—	—	—	—	1,119
Small-scale	413[j]	300[k]	331[l]	400[m]	1
VII. Construction materials	231	172	221	243	520
Large-scale	168	153	162	192	495
Small-scale	63	19	59	51	25
A. Cement industry	n.a.	22	22	23	33
Large-scale	19	22	22	23	33
Small-scale	n.a.	—	—	—	—
B. Bricks and other construction materials	n.a.	55	83	94	161
Large-scale	87	43	47	62	145
Small-scale	n.a.	12	36	32	16
C. Glass	n.a.	69	71	73	83
Large-scale	59	69	71	73	83
Small-scale	n.a.	—	—	—	—
D. Others	n.a.	26	45	53	243
Large-scale	3	19	22	34	234
Small-scale	n.a.	7	23	19	9
VIII. Printing	79	85	115	93	123
Large-scale	70	77	76	87	115
Small-scale	9	8	39	6	8
A. Printing and publishing	n.a.	n.a.	71	n.a.	n.a.
Large-scale	49	69	64	69	n.a.
Small-scale	n.a.	n.a.	7	n.a.	n.a.

(continued)

TABLE A-2 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
B. Stationery and art equipment	n.a.	n.a.	44	n.a.	n.a.
Large-scale	21	8	12	18	n.a.
Small-scale	n.a.	n.a.	32	n.a.	n.a.
IX. Textiles and allied products	1,847	1,757	1,919	1,898	2,000
Large-scale	773	873	968	1,068	1,800
Small-scale	1,074	884	951	830	200
A. Cotton ginning	n.a.	5	5	7	16
Large-scale	11	5	5	7	16
Small-scale	n.a.	—	—	—	—
B. Primary processing of fibers	n.a.[o]	5	4	6	73
Large-scale	n.a.	5	4	6	73
Small-scale	n.a.	—	—	—	—
C. Cotton fabrics	n.a.	580	610	593	516
Large-scale	501	517	547	539	515
Small-scale	n.a.	63	63	54	1
D. Linen fabrics	n.a.	102	95	96	72
Large-scale	71	100	93	94	72
Small-scale	n.a.	9	2	2	—
E. Woolen fabrics	n.a.	154	182	167	126
Large-scale	91	76	77	78	97
Small-scale	n.a.	78	105[p]	89	29
F. Silk fabrics	n.a.	18	34	36	25
Large-scale	35	11	18	23	25
Small-scale	n.a.	7	16	13	—
G. Hemp and jute products	n.a.	45	59	52	86
Large-scale	17	20	25	26	56
Small-scale	n.a.	25[q]	34[q]	26[q]	30
H. Knitted goods	n.a.	66	104	103	192
Large-scale	6	18	31	47	156
Small-scale	n.a.	48	73	56	36
I. Garment industry	n.a.	328	410	332	436
Large-scale	6	50	79[p]	114	403
Small-scale	n.a.	278	331	218	33
J. Leather industry	n.a.	81	93	85	48
Large-scale	17	41	45	49	47
Small-scale	n.a.	40	48	36	1
K. Fur industry	n.a.	34	27	33	43
Large-scale	4	3	5	8	41
Small-scale	n.a.	31	22	25	2

(continued)

TABLE A-2 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
L. Boots and shoes, production and repair	n.a.	330	296	317	283
Large-scale	14	27	39	77	239
Small-scale	n.a.	303	257	240	44
M. Others		2		71	84
Large-scale		—		—	60
Small-scale		2		71	24
X. Food and allied products	1,072	736	803	822	1,094
Large-scale	448	273	322	343	905
Small-scale	624	463	481	479	189
A. Flour and groats	n.a.	167	167	120	174
Large-scale	50	49	42	41	59
Small-scale	n.a.	118	125[r]	79	115
B. Sugar	148	53	60	59	91
Large-scale	148	53	60	59	91
Small-scale	—	—	—	—	—
C. Confectionery	n.a.	31	42	47	64
Large-scale	26	17	22	28	58
Small-scale	n.a.	14	20	19	6
D. Vegetable oil	n.a.	29	34	34	27
Large-scale	13	12	14	16	20
Small-scale	n.a.	17	20	18	7
E. Starch and syrup	n.a.	5	5	6	15
Large-scale	9	4	3	4	14
Small-scale	n.a.	1	2	2	1
F. Alcohol, wine, yeast, and vodka	25	40	39	33	76
Large-scale	25	32	39	33	76
Small-scale	—	8	—	—	—
G. Beer and malt	12	16	15	13	
Large-scale	12	16	15	13	
Small-scale	—	—	—	—	—
H. Tobacco and makhorka	32	33	29	26	21
Large-scale	32	33	29	26	21
Small-scale	—	—	—	—	—
I. Salt	20	7	7	7	9
Large-scale	20	7	7	7	9
Small-scale	—	—	—	—	—
J. Grease, tallow, and soap	n.a.	17	14	14	27
Large-scale	11	9	11	12	24
Small-scale	n.a.	8	3	2	3

(continued)

TABLE A-2 (concluded)

Industry	1913	1926/27	1927/28	1928/29	1933
K. Fishing	277	204	229	299	180
Large-scale	—	—	30	38	179
Small-scale	277 [t]	204 [u]	199 [u]	261 [u]	1
L. Others	n.a.	134	162	167	410
Large-scale	102	41	50	67	354
Small-scale	n.a.	93 [v]	112 [v]	100 [v]	56
XI. All others	83	74	80	103	211
Large-scale	23	55	33	63	186
Small-scale	60	19	47	40	25
A. China and pottery	n.a.	43	39	40	37
Large-scale	21	26	25	26	31
Small-scale	n.a.	17	14	14	6
B. Others	n.a.	31	41	63	174
Large-scale	2 [w]	29	8 [w]	37	155
Small-scale	n.a.	2	33	26	19
Total excl. repair shops	5,817	4,819	5,379	5,538	8,653
Large-scale	2,864	2,726	2,971	3,296	8,062
Small-scale	2,953	2,093	2,408	2,241	591
Repair shops	86	81	86	96	1,573
Large-scale	86	81	86	96	1,303
Small-scale	—	—	—	—	270
District railroad repair shops	86	81	86	96	271
Large-scale	86 [x]	81	86 [x]	96	271
Small-scale	—	—	—	—	—
Other repair shops	n.a.	n.a.	n.a.	n.a.	1,572
Large-scale	n.a.	n.a.	n.a.	n.a.	1,302 [y]
Small-scale	n.a.	n.a.	n.a.	n.a.	270 [y]
Total incl. repair shops	5,903	4,900	5,465	5,634	10,226
Large-scale	2,950	2,807	3,057	3,393	9,365
Small-scale	2,953	2,093	2,408	2,241	861

— negligible.

NOTES TO TABLE A-2

[a] Includes all mining products.

[b] Includes all kinds of fuel processing.

[c] Includes oil shale.

[d] Includes paints, varnishes, and pharmaceutical chemicals.

[e] Includes tar (4 thous.), chemical wood processing (1 thous.), and others (12 thous.).

[f] Total small-scale for machine building and metal products apportioned to components by small-scale employment in 1927/28.

[g] Includes furniture and prefabricated houses.

[h] Includes carts and sleds.

[i] Paper products.

[j] Employment in 1927/28 extrapolated by haulage of industrial timber (*48*, Table B-2). Data underestimated because seasonal workers hired with their own horses are not included.

[k] Assumed to be 90% of 1927/28 employment.

[l] *89*, 10.

[m] No. of persons engaged (Table A-1) divided by 3 on the assumption that average logging season was 4 months.

[n] Includes extraction of minerals (125 thous.) and others (109 thous.).

[o] Distributed among individual fibers.

[p] Includes felt and felt products.

[q] Includes mixed fibers.

[r] Derived from total no. of weeks worked in 1927/28 and the percentage share of total weeks worked accounted for by flour milling and grain cracking in 1928/29 (*40*, 189). This was divided by average annual no. of weeks worked in large-scale flour industry (45.4).

[s] Includes beer and malt.

[t] Employment in 1926/27 extrapolated by fish catch (*48*, Table B-2).

[u] Taken from Table A-1 without adjustment because assumed to be full-time equivalents.

[v] Includes bakeries, dairy products, and other food products.

[w] For 1913, artificial gas; for 1927/28, includes water supply (7 thous.) and artificial gas (1 thous.).

[x] No. of workers is taken to be half the 1932 level (*75*, 3 f) and salaried personnel the same fraction of workers as for machine building in 1913 (see Table A-2a below).

[y] Given in Soviet sources as "others" under machine building and metal products. The large-scale component is known to include maintenance repair shops, and we have assumed the entire category applies to repair shops of various kinds.

SOURCE AND DERIVATION OF TABLE A-2

(Note: Exceptions to these general explanations are separately footnoted above.)

Total industry: Sum of large- and small-scale industry.

1913

Large-scale industry: For "census" industry, sum of no. of workers on interwar territory (*42*, 398 ff, or *75*, 3 ff) and of salaried personnel, the latter derived by dividing no. of workers by ratio of workers to salaried personnel. The ratios used are given in Table A-2a below, which is derived from data in the 1918 industrial census on employment in 1913 in "census" enterprises that still existed in 1918 (*65*, 180 f). When data were lacking for particular industries, the average ratio for all covered industries was used.

TABLE A-2a

RATIO OF WORKERS TO SALARIED PERSONNEL IN LARGE-SCALE INDUSTRY, BY INDUSTRIAL GROUP, 1913

Extraction and processing of minerals	15.4
Mining and metallurgy	16.3
Metal products	10.8
Machine building	10.0
Wood products	8.5
Chemical industry	7.5
Food industry	8.1
Products of animal origin	5.4
Leather and fur industry	14.7
Cotton industry	23.0
Woolen industry	16.9
Silk industry	24.4
Linen industry	20.0
Hemp industry	25.8
Mixed fibers	14.5
Garment industry	15.2
Paper industry	15.5
Printing industry	10.1
Scientific, school, and art equipment	7.3
Water supply and gas industry	4.5
All industries above	14.6

Small-scale industry: Estimates in Table A-1, col. 1, reduced to full-time equivalents by multiplying them by ratio (see Table A-2b), for each industry, of no. of weeks worked per year in small-scale sector in 1913 to full-time work year (assumed to be 48 weeks). When data were lacking for particular industries, the avg. no. of weeks worked per year was used to compute the ratio. The data in Table A-2b were derived from *2*, 196.

TABLE A-2b

NUMBER OF WEEKS WORKED PER YEAR IN SMALL-SCALE INDUSTRY, BY INDUSTRIAL GROUP, 1913

Extraction and processing of minerals	19.2
Metal products	31.2
Machine and machine tool building	26.8
Wood products	27.6
Chemical industry	16.8
Products of animal origin	27.2
Leather and fur industry	29.2
Cotton industry	24.0
Woolen industry	20.8
Silk industry	38.8
Linen industry	25.2
Hemp industry	22.8
Mixed fibers	27.2
Garment industry	30.4
Paper products	32.4
Scientific, school, and art equipment	31.6
All industries above	27.0

Appendix

1926/27

Large-scale industry: 14.

Small-scale industry: Data in Table A-1, col. 2, reduced to full-time equivalents by multiplying them by ratio, for each industry, of no. of weeks worked per year in small-scale sector to no. of weeks worked per year in large-scale sector. The former was derived as a simple avg. of the no. of weeks worked per year in small-scale industry in 1924/25 (*80*, 256 ff) and in 1928/29 (*40*, 14 ff). The latter was taken as 44 weeks for all industries (see *14*). When data were lacking for particular industries, the avg. no. of weeks worked per year was used to compute the ratio.

1927/28

Large-scale industry: Sum of no. of workers (derived from no. of workers in 1928/29 and percentage increase between 1927/28 and 1928/29, both in *23*, 88 ff) and no. of salaried personnel as of Jan. 1, 1928 (*73*, 12 ff).

Small-scale industry: Total no. of weeks worked in small-scale industry (*87*) apportioned among industries according to the percentage distribution for 1928/29 (*40*, 118 ff). For each industry, the total no. of weeks worked was divided by the avg. no. of weeks worked per worker in the corresponding large-scale industry. The latter averages are derived from the no. of days worked in each large-scale industry (*23*, 88 ff) divided by 6 times the avg. annual no. of workers in the corresponding large-scale industry.

1928/29

Large-scale industry: 23, 88 ff.

Small-scale industry: Data in Table A-1, col. 4, reduced to full-time equivalents by multiplying them by ratio, for each industry, of no. of weeks worked per year in small-scale sector (*40*, 14 ff) to no. of weeks worked per year in large-scale sector (taken as 44 for all industries). When data were lacking for particular industries, the avg. no. of weeks worked per year was used to compute the ratio.

1933

Large-scale industry: Avg. annual no. of workers (*24*, 41 ff) multiplied by ratio of total no. of persons engaged to no. of workers (derived from labor statistics for 1933 in *88*, 62 ff).

Small-scale industry: 24, 41 ff. These figures are already in full-time equivalents.

Appendix

TABLE A-3

VALUE OF OUTPUT OF LARGE- AND SMALL-SCALE INDUSTRY: SOVIET UNION, SELECTED YEARS

(million rubles [a])

Industry	1913	1926/27	1927/28	1928/29	1933
I. Electric power stations	105.4 [b]	158.9	191.7	237.3	855.5
Large-scale	105.4	158.9	191.7	236.5	854.3
Small-scale	—	—	—	0.8	1.1
II. Fuel	647.6	1,025.5	1,186.9	1,315.7	2,766.6
Large-scale	647.2	1,025.5	1,186.0	1,314.3	2,766.2
Small-scale	0.4	—	0.9	1.4	0.4
A. Coal and coke	213.3	354.4	416.7	455.1	1,102.9
Large-scale	213.3	354.4	416.7	455.1	1,102.9
Small-scale	—	—	—	—	—
B. Petroleum	426.8	615.0	713.9	787.4	1,468.2
Large-scale	426.8	615.0	713.9	787.4	1,468.2
Small-scale	—	—	—	—	—
1. Crude petroleum and natural gas extraction	240.7	304.2	336.0	375.4	498.6
Large-scale	240.7	304.2	336.0	375.4	498.6
Small-scale	—	—	—	—	—
2. Petroleum refining	186.1	310.8	377.9	412.0	969.6
Large-scale	186.1	310.8	377.9	412.0	969.6
Small-scale	—	—	—	—	—
C. Peat	7.5	51.4	52.0	67.8	178.0
Large-scale	7.1	51.4	51.1	66.4 [c]	177.6
Small-scale	0.4	—	0.9	1.4	0.4
D. Artificial gas	—	4.6	4.3	5.4	17.5
Large-scale	—	4.6	4.3	5.4	17.5 [d]
Small-scale	—	—	—	—	—
III. Ferrous mining and metallurgy	334.3	677.1	720.3	845.3	1,880.1
Large-scale	334.3	677.1	720.3	845.3	1,880.1
Small-scale	—	—	—	—	—
A. Mining of ferrous ores	49.3	38.3	44.0	65.7	313.9
Large-scale	49.3	38.3	44.0	65.7	313.9
Small-scale	—	—	—	—	—
1. Iron ore	42.6	30.7	35.4	46.6	96.8
Large-scale	42.6	30.7	35.4	46.6	96.8
Small-scale	—	—	—	—	—
2. Manganese ore	6.7	7.6	8.7	19.0	14.5
Large-scale	6.7	7.6	8.7	19.0	14.5
Small-scale	—	—	—	—	—

(continued)

TABLE A-3 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
3. Others					202.6
Large-scale					202.6
Small-scale					—
B. Ferrous metallurgy	285.0	638.9	676.2	779.6	1,566.2
Large-scale	285.0	638.9	676.2	779.6	1,566.2
Small-scale	—	—	—	—	—
IV. Nonferrous mining and metallurgy	109.8	80.6	95.0	79.0	390.8
Large-scale	109.8	80.6	94.8	78.6	390.8
Small-scale	—	—	0.2	0.4	—
A. Mining of nonferrous ores	81.4	41.6	51.4	14.7	55.3
Large-scale	81.4 [e]	41.6	51.2	14.3 [f]	55.3
Small-scale	—	—	0.2	0.4	—
B. Nonferrous metallurgy	28.4	39.0	43.6	64.3	335.5
Large-scale	28.4	39.0	43.6	64.3	335.5
Small-scale	—	—	—	—	—
V. Machine building and metal products	775.3	1,593.5	1,696.1	2,233.0	11,125.5
Large-scale	646.1	1,368.7	1,431.3	1,936.3	10,732.6
Small-scale	129.2	224.8	264.8	296.7	393.0
A. Machine building	398.1	945.2	963.9	1,424.2	7,627.0
Large-scale	398.1	924.9	917.1	1,352.3	7,614.3
Small-scale	—	20.3	46.8	71.9	12.7
1. Land transportation equip. (incl. tractors)	n.a.	206.2	142.3 [g]	246.9	2,286.1
Large-scale	n.a.	206.2	142.3	246.9	2,279.2
Small-scale	n.a.	—	—	—	6.9
2. Shipbuilding	n.a.	99.8	85.3	130.7	494.8
Large-scale	n.a.	99.1	79.0	119.0	494.8 [h]
Small-scale	n.a.	0.7	6.3	11.7	—
3. Agricultural machinery (excl. tractors)	n.a.	133.2	177.3 [g]	256.8	398.4
Large-scale	n.a.	132.4	163.8	231.0	398.2
Small-scale	n.a.	0.8	13.5	25.8	0.3
4. Electrical and industrial machinery	n.a.	506.0	559.1	789.7	4,447.7
Large-scale	n.a.	487.2	532.0	755.4	4,442.1
Small-scale	n.a.	18.8	27.1	34.3	5.5
B. Metal products	377.2	648.2	732.2	808.8	1,746.4
Large-scale	248.0	443.8	514.2	584.0 [i]	1,714.1
Small-scale	129.2	204.4	218.0	224.8	32.3

(continued)

TABLE A-3 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
VI. Extraction of minerals for chemical, construction, glass and china industries	—	37.0	52.3	79.7	269.5
Large-scale	—	30.3	40.2	62.3	259.6
Small-scale	—	6.7	12.1	17.4	10.0
VII. Chemicals	193.2	271.4	310.9	408.5	1,401.9
Large-scale	184.4	250.4	281.1	370.8	1,350.9
Small-scale	8.8 [j]	21.0	29.8	37.7	51.0
A. Basic chemicals	n.a.	78.6	85.6	103.5	324.9
Large-scale	n.a.	78.0	84.7	102.4	323.8
Small-scale	n.a.	0.6	0.9	1.1	1.2
B. Paints and varnishes	n.a.	49.9	60.8	72.3	166.4
Large-scale	n.a.	44.8	53.5	63.1	155.8
Small-scale	n.a.	5.1	7.3	9.2	10.6
C. Pharmaceutical chemicals	n.a.	43.6	50.0	69.2	173.2
Large-scale	n.a.	42.6	48.5	67.3	168.8
Small-scale	n.a.	1.0	1.5	1.9	4.4
D. All other chemicals	n.a.	99.2	114.7	163.6	737.3
Large-scale	0.2	85.0	94.5	138.1 [k]	702.4 [l]
Small-scale	n.a.	14.2	20.2	25.5	34.9 [l]
VIII. Construction materials	116.3	181.3	199.5	246.4	530.8
Large-scale	83.8	150.6	155.6	190.8	498.7
Small-scale	32.5	30.7	43.9	55.6	32.2
A. Cement	39.6	63.1	67.4	79.6	105.2
Large-scale	39.6	62.2	66.0	77.7	105.2
Small-scale	—	0.9	1.4	1.9	—
B. Bricks and other construction materials	76.7	118.2	132.1	167.0	425.7
Large-scale	44.2	88.3	89.6	113.2	393.5
Small-scale	32.5 [m]	29.9	42.5	53.8	32.2
IX. Glass and china industries	58.9	160.7	171.0	210.1	413.5
Large-scale	58.9	158.3	167.2	205.0	399.5
Small-scale	—	2.4	3.8	5.1	13.9
A. Glass	45.9	115.8	121.1	151.3	275.1
Large-scale	45.9	113.5	117.5	146.5	273.2
Small-scale	—	2.3	3.6	4.8	1.9
B. China	13.0	44.9	49.9	58.7	138.4
Large-scale	13.0	44.8	49.7	58.4	126.3
Small-scale	[n]	0.1	0.2	0.3	12.0

(continued)

TABLE A-3 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
X. Extraction of all other minerals (incl. asbestos, excl. salt)	5.7	28.9	32.7	42.0	74.5
Large-scale	5.7	28.3	31.7	40.7	74.2
Small-scale	—	0.6	1.0	1.3	0.3
A. Asbestos	2.1	6.9	7.8	9.3	24.4
Large-scale	2.1	6.9	7.8	9.3	24.4
Small-scale	—	0.01	0.02	0.03	—
B. All other mineral products	3.6	22.1	24.8	32.6	50.1
Large-scale	3.6	21.5	23.9	31.4	49.8
Small-scale	—	0.6	0.9	1.2	0.3
XI. Rubber products	85.6	148.7	184.0	225.9	623.1
Large-scale	85.6	147.8	182.7	224.2	623.1
Small-scale	—	0.9	1.3	1.7	—
XII. Wood products (incl. matches)	329.9	661.3	755.6	902.2	1,832.3
Large-scale	182.5	477.7	536.2	653.7	1,698.2
Small-scale	147.4	183.6	219.4	248.5	134.1
A. Plywood and lumber	n.a.	369.9	402.0	484.5	905.2
Large-scale	135.8	356.0	386.6	468.1	890.6
Small-scale	n.a.	13.9	15.4	16.4	14.7
B. Miscellaneous wood products	n.a.	261.2	319.3	372.6	875.7
Large-scale	35.4	91.5	115.3	140.5	756.4[o]
Small-scale	n.a.	169.7	204.0	232.1	119.3[o]
C. Matches	11.3	30.3	34.4	45.2	51.3
Large-scale	11.3	30.3	34.4	45.2	51.3
Small-scale	—	—	—	—	—
XIII. Logging	842	765.0	721.8	814.0	1,565.7
Large-scale	—	—	—	—	1,564.1
Small-scale	842[p]	765.0[q]	721.8[r]	814.0[q]	1.6
XIV. Pulp and paper	82.5	181.6	192.5	256.2	302.6
Large-scale	77.7	169.7	179.6	242.6	302.6
Small-scale	4.8	11.9	12.9	13.6	—
XV. Textiles and allied products	1,576.5	3,798.2	4,193.5	4,893.5	6,069.4
Large-scale	1,475.0	3,465.8	3,789.8	4,431.0	6,007.6
Small-scale	101.5	332.4	403.7	462.5	61.7
A. Cotton industry	1,065.6	2,541.3	2,775.5	3,148.9	3,612.9
Large-scale	1,065.6	2,474.5	2,687.4	3,042.1	3,608.4
Small-scale	—	66.8	88.1	106.8	4.5

(continued)

TABLE A-3 (continued)

Industry	1913	1926/27	1927/28	1928/29	1933
1. Cotton ginning	n.a.	186.9	212.0	267.2	470.2
Large-scale	n.a.	185.8	210.5	265.3	469.6
Small-scale	—	1.1	1.5	1.9	0.6
2. Cotton textiles	n.a.	2,354.4	2,563.5	2,881.6	3,142.7
Large-scale	n.a.	2,288.7	2,476.9	2,776.8	3,138.8
Small-scale	—	65.7	86.6	104.8	3.9
B. Flax and mixed fibers	136.4	254.9	249.6	305.4	422.1
Large-scale	119.5	248.2	241.1	295.4	421.3
Small-scale	16.9 [s]	6.7	8.5	10.0	0.8
1. Primary processing of mixed fibers	24.0	32.4	34.7	48.8	98.9
Large-scale	24.0	30.2	30.6	43.0	98.6
Small-scale	—	2.2	4.1	5.8	0.3
2. Processing of flax	112.4	222.4	214.8	256.5	323.2
Large-scale	95.5	218.0	210.5	252.4	322.7
Small-scale	16.9	4.4	4.3	4.1	0.5
C. Wool industry	199.1	538.0	595.6	698.0	718.4
Large-scale	195.1	464.1	496.9	577.7	706.9
Small-scale	4.0 [s]	73.9	98.7	120.3	11.4
1. Wool washing	n.a.	16.6	16.8	28.0	47.6
Large-scale	n.a.	16.2	16.3	27.3	47.3
Small-scale	n.a.	0.4	0.5	0.7	0.3
2. Wool products	n.a.	521.4	578.7	670.1	670.8
Large-scale	n.a.	447.9	480.6	550.4	659.6
Small-scale	n.a.	73.5	98.1	119.7	11.1
D. Silk industry	64.7	96.0	132.8	191.9	268.7
Large-scale	49.2	77.0	102.0	150.2	267.8
Small-scale	15.5 [s]	19.0	30.8	41.7	0.9
E. Hemp and jute products	56.7	86.7	99.4	116.7	185.4
Large-scale	30.6	69.9	78.3	91.9	173.3
Small-scale	26.1 [s]	16.8	21.1	24.8	12.1
F. Knitted goods	16.9	161.0	210.0	280.4	699.0
Large-scale	9.8	105.4	150.5	218.7	688.3
Small-scale	7.1 [s]	55.6	59.5	61.7	10.6
G. Felt and felt products	37.1	120.4	130.4	152.2	162.9
Large-scale	5.2	26.8 [t]	33.5	54.9 [t]	141.6
Small-scale	31.9 [s]	93.6	96.9	97.3	21.4
XVI. Garment industry	256.7	794.5	896.0	1,119.3	2,116.9
Large-scale	7.7	226.8 [t]	349.8	611.5 [t]	2,046.9
Small-scale	249.0 [s]	567.7	546.2	507.8	70.0

(continued)

TABLE A-3 (continued)

	Industry	1913	1926/27	1927/28	1928/29	1933
XVII.	Leather, fur, and shoe industry	605.1	1,323.2	1,355.9	1,549.6	1,833.0
	Large-scale	91.1	558.1	670.4	964.7	1,760.8
	Small-scale	514.0	765.1	685.5	584.9	72.2
	A. Leather, natural and artificial		601.6	581.2	617.3	535.5
	Large-scale	61.3	392.8	414.5	497.7	517.9
	Small-scale	17.3 [u]	208.8	166.7	119.6	17.5
	B. Fur products		87.2	129.7	169.8	432.3
	Large-scale		25.9	50.5	75.1	422.1
	Small-scale		61.3	79.2	94.7	10.1
	C. Boots and shoes, production and repair	526.5	634.3	645.0	762.5	865.3
	Large-scale	29.8	139.3	205.4	391.9	820.7
	Small-scale	496.7 [v]	495.0	439.6	370.6	44.6
XVIII.	Grease, tallow, soap, and perfume	75.1	171.2	218.4	246.5	342.9
	Large-scale	75.1	145.8	197.4	230.5	320.7
	Small-scale	[w]	25.4	21.0	16.0	22.2
XIX.	Food and allied products (excl. fish catch)	2,743.9	4,649.4	5,447.2	6,088.6	9,693.2
	Large-scale	1,812.3	2,560.5	3,069.2	3,494.7	6,949.6
	Small-scale	931.6 [x]	2,088.9	2,378.0	2,593.9	2,743.5
	A. Flour milling and grain cracking	n.a.	2,299.3	2,608.0	2,809.0	3,553.9
	Large-scale	424.3	870.8	973.6	1,018.8	1,285.6
	Small-scale	n.a.	1,428.5	1,634.4	1,790.2 [y]	2,268.3
	B. Beet sugar	n.a.	443.0	604.5	605.2	449.2
	Large-scale	297.6	443.0	604.5	605.2	449.2
	Small-scale	n.a.	—	—	—	—
	C. Confectionery	n.a.	156.3	217.2	311.4	737.7
	Large-scale	55.2	99.1	149.2	234.6	688.2
	Small-scale	n.a.	57.2	68.0	76.8	49.6
	D. Vegetable oil	n.a.	201.1	245.6	296.2	273.9
	Large-scale	95.2	129.6	173.1	224.9	261.6
	Small-scale	n.a.	71.5	72.5	71.3	12.2
	E. Starch and syrup	n.a.	30.8	28.0	46.2	63.9
	Large-scale	19.1	26.5	20.6	36.0	60.0
	Small-scale	n.a.	4.3	7.4	10.2	3.9
	F. Wine, yeast, and vodka	n.a.	362.7	362.7	372.1	1,012.4
	Large-scale	482.5 [z]	357.9	356.6	364.8	1,003.4
	Small-scale	n.a.	4.8	6.1	7.3	8.9

(continued)

TABLE A-2 (concluded)

Industry	1913	1926/27	1927/28	1928/29	1933
G. Beer and malt	n.a.	104.2	97.1	95.4	164.0
Large-scale	64.7	103.7	96.5	94.7	164.0
Small-scale	n.a.	0.5	0.6	0.7	—
H. Tobacco and makhorka	n.a.	169.7	177.6	186.5	269.3
Large-scale	96.4	168.1	175.5	184.1	268.1
Small-scale	n.a.	1.6	2.1	2.4	1.2
I. Salt	n.a.	17.1	16.4	19.8	25.0
Large-scale	9.7	17.1	16.4	19.8	24.8
Small-scale	n.a.	—	—	—	—
J. Others	n.a.	865.2	1,090.2	1,347.0	3,143.9
Large-scale	267.6	344.7	503.3	711.8	2,744.7
Small-scale	n.a.	520.5	586.9	635.2	399.2
XX. Fishing	134.4	209.2 [aa]	242.8 [r]	276.3 [r]	410.8
Large-scale	—	—	31.8 [bb]	36.2 [bb]	406.8
Small-scale	134.4 [r]	209.2	211.0 [bb]	240.1 [bb]	4.0
XXI. Printing, publishing, stationery, etc.	100.3	265.8	294.5	377.9	612.3
Large-scale	92.0	216.6	237.9	315.7	572.9
Small-scale	8.3	49.2	56.6	62.2	39.9
A. Printing and publishing	n.a.	211.7	220.5	265.2	420.9
Large-scale	n.a.	190.0	204.2	254.8	395.5
Small-scale	n.a.	21.7	16.3	10.4	25.4
B. Stationery and art equipment	n.a.	54.1	74.1	112.7	191.4
Large-scale	n.a.	26.6	33.8	60.9	177.4
Small-scale	n.a.	27.5	40.3	51.8	14.0
XXII. All others	67.3	151.1	172.0	222.2	631.4
Large-scale	28.8	97.2	105.4	145.7	589.8
Small-scale	38.5	53.9	66.6	76.5	41.6
Total excl. repair shops	9,245.9	17,334.1	19,330.6	22,669.2	45,742.5
Large-scale	6,103.4	11,994.7	13,650.1	16,630.0	42,050.1
Small-scale	3,142.4	5,339.4	5,680.5	6,039.2	3,692.5
XXIII. District railroad repair shops	136.6	150.0	180.0	219.0	212.7
Large-scale	136.6	150.0 [cc]	180.0 [cc]	219.0 [cc]	210.7
Small-scale	—	—	—	—	1.9
Total incl. repair shops	9,382.5	17,484.1	19,510.6	22,888.2	45,955.2
Large-scale	6,240.0	12,144.7	13,830.1	16,849.0	42,260.8
Small-scale	3,142.4	5,339.4	5,680.5	6,039.2	3,694.4

— negligible.

NOTES TO TABLE A-3

Value of output (*valovaia produktsiia*) is the value of goods produced and work done on an enterprise basis, but including some intershop transfers in a few industries (e.g., textiles, ferrous metals, and meat packing).

[a] Current rubles for all years except 1933, for which data are official 1926/27 rubles.

[b] Includes gas and water supply.

[c] 1927/28 value of output extrapolated by output (*48*, Table B-2).

[d] Includes oil shale and fuel refining other than oil refining.

[e] Includes gold, platinum, and other nonferrous metals.

[f] Includes lead, tin, and silver ore. Not comparable with 1927/28 data.

[g] Value of output for tractors was 6.8 mill. rubles (*48*, Tables B-2 and D-8).

[h] *77*, 6 f.

[i] Includes machine-made metal products for mass consumption, other ferrous products, type-foundry products, and nonferrous metal products.

[j] Does not include chemical wood processing, for which data were not available.

[k] Includes tar, chemical wood processing, and other chemical products.

[l] Includes organic chemicals and chemical wood processing.

[m] Includes pottery.

[n] Included in bricks and other construction materials.

[o] Includes prefabricated houses, furniture, and other wood products.

[p] 1926/27 value of output in prewar rubles (976.9 mill. in *28*, 339) extrapolated by output (*48*, Table B-2).

[q] Marketed output in current prices (*31*, 422). Because of its close ties with agriculture, logging is put in small-scale industry.

[r] Output times price (*48*, Tables B-2 and D-8).

[s] Value of output of large-scale industry times ratio of small-scale to large-scale industry as given by Morgenshtern's data (*41*).

[t] Derived from data for garment and other apparel industry.

[u] Value of output of large-scale leather and fur industry times 1908 ratio of small-scale to large-scale value as given by Rybnikov (*61*, 6–8).

[v] Value of output of large-scale industry times ratio of small-scale to large-scale value as given by Gorelik (*17*, 16).

[w] Included in food and allied products.

[x] Includes grease, soap, tallow, and perfume.

[y] Total value of output including flour milling (*26*, 281) minus total value of output excluding flour milling (*40*, 118).

[z] Includes excise tax.

[aa] Derived from output in 1926/27 and price (280 rubles/m. ton, from 1927/28 output and value of output in 1926/27 prices in *51*, 10).

[bb] Total apportioned on the basis of employment in 1927/28 (Table A-2).

[cc] Value of output per worker (assumed to be the same as in the large-scale machine-building industry, see above and Table A-2) multiplied by no. of workers in district railroad repair shops (Table A-2).

SOURCE AND DERIVATION OF TABLE A-3

(Note: Exceptions to these general explanations are separately footnoted above.)

Total industry: Sum of large- and small-scale industry.

1913

Large-scale industry: Taken from *8* and *42*, 318 ff. Interwar territory.

Small-scale industry: Taken from *2*. Given in prewar rubles for interwar territory.

Appendix

1926/27

Large-scale industry: Derived from *14,* Table 3, 84 ff.

Small-scale industry: Turnover in 1926/27 (*48,* Table C-2) times avg. ratio of value of output to turnover for 1924/25 (from *80,* 245 ff) and for 1928/29 (from *48,* Table C-2).

1927/28

Large-scale industry: Derived from *81,* 324 ff.

Small-scale industry: Avg. value of output for 1926/27 and 1928/29 times ratio for total small-scale industry (1.0156) of value of output for 1927/28 (*6,* 1929, 9, 281) to avg. for 1926/27 and 1928/29.

1928/29

Large-scale industry: Taken from *23,* 88 ff.

Small-scale industry: Taken from *40,* 14 ff.

1933

Large- and small-scale industry: Taken from *24,* 41 ff.

TABLE A-4

BASIC DATA FOR PRODUCTION INDEXES FOR INDUSTRIAL MATERIALS, LARGE- AND SMALL-SCALE INDUSTRY: SOVIET UNION, 1913, 1927/28, AND 1933

Code	*Product*	Unit	1927/28 Unit Weight (rubles) [a]	*Output, Large-Scale Industry*			*Output, Small-Scale Industry*		
				1913	1927/28	1933	1913	1927/28	1933
103	Steel ingots and castings	th. m.t.	115.8	4,231	4,251	6,889	—	—	—
202	Copper	th. m.t.	995	31.1	30.0	44.3	—	—	—
203	Lead	th. m.t.	675	1.52	2.34	13.7	—	—	—
204	Zinc	th. m.t.	700	2.95	2.25	16.6	—	—	—
301.1	Hydroelectric power	bill. kwh.	0.0486	1.94	5.01	16.36	—	—	—
302	Anthracite	mill. m.t.	10.8	4.78	8.00	20.73	—	—	—
303	Bituminous coal	mill. m.t.	9.8	23.21	24.45	46.74	—	—	—
304	Lignite	mill. m.t.	6.9	1.13	3.06	8.87	—	—	—
305	Crude petroleum	mill. m.t.	28.7	9.23	11.63	21.49	—	—	—
306	Natural gas	mill. m^3	0.058	29	304	1,066	—	—	—
307	Oil shale	th. m.t.	5.7	—	0.6	174	—	—	—
308	Peat	mill. m.t.	8.8	100	79	107	—	—	—
309	Firewood (consumption)	mill. m^3	5.7	33	26	75	67	53	32
401	Soda ash	th. m.t.	73	160	217.3	329.7	—	—	—
404	Sulfuric acid	th. m.t.	101.9	121	211	627	—	—	—
405.1	Phosphoric fertilizer (18.7% P_2O_5)	th. m.t.	39.9	47.1	111.5	545.0	—	—	—
405.2	Ammonium sulfate	th. m.t.	100	13.8	11.2	110.9	—	—	—
405.3	Potash fertilizer (41.6% K_2O)	th. m.t.	62.4	—	—	45.8	—	—	—
406	Ground natural phosphate	th. m.t.	12	7.9	12.7	332.0	—	—	—
410	Red lead	th. m.t.	830	2.4	4.6	2.6	—	0.8	0.2
416	Paper	th. m.t.	444	197.0	284.5	506.1	—	—	—
417	Paperboard	th. m.t.	275	20.0	47.1	79.0	—	—	—
418	Motor vehicle tires	thous.	83 [b]	19.2	85	679	—	—	—
501	Red bricks	millions	38 [c]	2,144	1,888	2,959	1,233	768	404
505	Sand-lime, silica, and slag bricks	millions	38 [c]	123	134	459	—	—	—
506	Cement	th. m.t.	33	1,520	1,850	2,709	—	—	—
507	Construction gypsum	th. m.t.	11	280	127	446	240	108	16
508	Construction lime	th. m.t.	15.4	275	284	1,394	235	242	73
510	Lumber	mill. m^3	28.6	8	8	26.8	6	6	0.5
511	Plywood	th. m^3	131.9	100	165	424	30	30	—
512	Magnesite metallurgical powder	th. m.t.	286.7	21.0	34.8	86	—	—	—
513	Roll roofing	mill. m^2	0.355	8.8	19.2	89.4	—	—	—
516	Asbestos shingles	millions	147 [c]	9	38.5	61.4	—	—	—
519	Window glass	mill. m^2	2.65	23.2	33.5	29.8	0.5	0.7	—
1501	Flour	mill. m.t.	21.3	10	8	7	18	16	13
1503	Butter	th. m.t.	429	—	—	89.5	104	82.1	34.8
1504	Vegetable oil	th. m.t.	120	264	280	300	207	338	21
1506	Meat slaughtering	th. m.t.	103	—	254	420	1,042	424	7
1507	Fish catch	th. m.t.	289	—	—	1,290	1,018	840	13
1509	Salt	th. m.t.	7.2	1,959	2,336	2,734	—	—	—
1510	Raw sugar	th. m.t.	184	1,347	1,283	995	—	—	—
1511	Starch and syrup	th. m.t.	104	115	69	142	30	27	9
1513	Canned food	mill. cans	0.0564	93	100	619	2	25	—
1514	Beer	th. hectol.	13.4	8,064	3,907	4,315	—	—	—
1515	Cigarettes	billions	1.3 [c]	21.0	47.1	62.7	1.1	2.4	—
1516	Low-grade tobacco	th. 20-kg. crates	3.5	2,872	3,150	2,513	1,062	1,143	—
601	Crude alcohol	th. hectol.	15.1	4,670	2,330	3,883	—	—	—
1604	Cotton fabrics	mill. m	0.347	2,453	2,539	2,732	129	139	—
1607	Linen fabrics	mill. m	0.662	102.0	174.4	170.9	18.0	3.5	—
1609	Silk and rayon fabrics	mill. m	4.0 [d] 3.0 [d]	45	13	25.9	7	1	0.1
1611	Woolen and worsted fabrics	mill. m	1.855	87	83	74.0	18	34	12.1
1614	Felt footwear	mill. pairs	5.2	2.2	4.4	6.1	13.8	11.2	1.5
604	Hard leather	th. m.t.	750	17.9	63.8	38.9	5.1	25.2	0.8
605	Soft leather	mill. dcm^2	27	897	2,175	2,436	253	875	50

Abbreviations and symbols:

— = negligible
bill. = billion
dcm^2 = square decimeter
hectol. = hectoliter
kg. = kilogram
kwh. = kilowatt hour

m = meter
m^2 = square meter
m^3 = cubic meter
m.t. = metric ton
mill. = million
th. or thous. = thousand

[a] Weight applies to basic unit, such as metric ton, kilowatt hour, and so on, except as noted.

[b] Per tire.

[c] Per thousand.

[d] Small-scale output weighted by value added per unit (taken as 80% of price) of pure silk fabrics, the first figure shown. Price (5 rubles/m) is derived from 1913 price (*68*, 1933, 2) and price index (1927/28 = 251% of 1913, in *11*, 1928, Sept., 25).

Appendix

SOURCE AND DERIVATION OF TABLE A-4

1927/28 unit weights: *48*, Table D-8.

Output, Large-Scale Industry

Except as noted, total output (*48*, Table B-2) minus small-scale output.

309 *Firewood*	
1913, 1927/28, 1933	Haulage of firewood for industry (*38*, 57).
410 *Red lead*	
1927/28	*78*, series 438.5, col. 6.
501 *Red bricks*	
1913, 1927/28	*78*, series 706.5.
507 *Construction gypsum*	
1913	*4*, Vol. 27, 536 ff.
510 *Lumber*	
1927/28	*11*, 1929, Sept., 2 ff.
511 *Plywood*	
1927/28	*11*, 1929, Sept., 2 ff.
604 *Hard leather*	
1927/28	*18*, 72.
605 *Soft leather*	
1927/28	*18*, 72.
1501 *Flour*	
1927/28	*78*, series 1103.5.
1504 *Vegetable oil*	
1913, 1927/28	*78*, series 1107.1, col. 6.
1506 *Meat slaughtering*	
1927/28	*78*, series 1109.2. State industry.
1511 *Starch and syrup*	
1913	*78*, series 1118.5.
1513 *Canned food*	
1913, 1927/28	*78*, series 1121.1, col. 6.
1515 *Cigarettes*	
1927/28	*11*, 1929, Sept., 22 ff.
1601 *Boots and shoes*	
1927/28	*78*, series 1201.1, col. 7.
1604 *Cotton fabrics*	
1927/28	*11*, 1929, Sept., 15.
1611 *Woolen and worsted fabrics*	
1927/28	*11*, 1929, Sept., 42.

Output, Small-Scale Industry

309 *Firewood*	
1913, 1927/28, 1933	Total consumption (*48*, Table B-2) minus haulage of firewood for industry (*38*, 57).
410 *Red lead*	
1913	No small-scale production.
1927/28	Total output minus large-scale output.
1933	Total output times share of small-scale industry (8%, *78*, Part 4, Appendix on Small-Scale Industry).
501 *Red bricks*	
1913, 1927/28	Total output minus large-scale output.
1933	Total output times share of small-scale industry (12%, *78*, Part 4, Appendix on Small-Scale Industry).

507 *Construction gypsum*	
1913	Total output minus large-scale output.
1927/28	Total output times share of small-scale industry (assumed to be the same as in 1913).
1933	Total output times share of small-scale extraction of mineral raw materials for the construction and ceramic industry given in value terms (3.7%, *77*, 4).
508 *Construction lime*	
1913, 1927/28	Total output times share of small-scale industry (assumed to be the same as for construction gypsum in 1913).
1933	Total output times share of small-scale extraction of mineral raw materials for the construction and ceramic industries given in value terms (3.7%, *77*, 4).
510 *Lumber*	
1913	Total output times share of small-scale industry (assumed to be the same as in 1927/28).
1927/28	Total output minus large-scale output.
1933	Total output times share of small-scale industry (2%, *78*, Part 4, Appendix on Small-Scale Industry).
511 *Plywood*	
1913	Total output times share of small-scale industry (assumed to be the same as in 1927/28).
1927/28	Total output minus large-scale output.
1933	Small-scale production negligible (*78*, Part 4, Appendix on Small-Scale Industry).
519 *Window glass*	
1913, 1927/28	Total output times share of small-scale industry (assumed to be the same in 1913 as in 1927/28; in 1927/28 2%, *78*, Part 4, Appendix on Small-Scale Industry).
1933	Small-scale production negligible (*78*, Part 4, Appendix on Small-Scale Industry).
604 *Hard leather*	
1913, 1933	Total output times share of small-scale industry (*78*, Part 4, Appendix on Small-Scale Industry).
1927/28	Total output minus large-scale output.
605 *Soft leather*	
1913, 1927/28, 1933	Same as for hard leather.
1501 *Flour*	
1913	Total output times share of small-scale industry (assumed to be the same as in 1927/28).
1927/28	Total output minus large-scale output.
1933	Total output (assumed to be the same as in 1932) times share of small-scale industry (63.8%, *24*, 44).
1503 *Butter*	
1913, 1927/28	Total output assumed to be small-scale.
1933	Total output times share of small-scale industry (28%, *24*, 42).
1504 *Vegetable oil*	
1913, 1927/28	Total output minus large-scale output.
1933	Total output times share of small-scale industry (6.6%, *24*, 42).
1506 *Meat slaughtering*	
1913	Total output assumed to be small-scale.
1927/28	Total output minus large-scale output.
1933	Total output times share of small-scale industry (1.7%, *77*, 10).

1507 *Fish catch*	
1913, 1927/28	Total output assumed to be small-scale.
1933	Total output times share of small-scale industry (1 %, *24*, 44).
1508 *Soap*	
1913, 1927/28, 1933	Total output times share of small-scale industry (assumed to be the same in 1913 as in 1927/28; for 1927/28 and 1933 15% and 11 %, *78*, Part 4, Appendix on Small-Scale Industry).
1511 *Starch and syrup*	
1913	Total output minus large-scale output.
1927/28, 1933	Total output times share of small-scale industry (28% and 6%, *78*, Part 4, Appendix on Small-Scale Industry).
1513 *Canned food*	
1913, 1927/28	Total output minus large-scale output.
1933	No small-scale production (*24*, 41 ff).
1515 *Cigarettes*	
1913	Total output times share of small-scale industry (assumed to be the same as in 1927/28).
1927/28	Total output minus large-scale output.
1933	Small-scale production negligible (*78*, Part 4, Appendix on Small-Scale Industry).
1516 *Low-grade tobacco*	
1913, 1927/28, 1933	Same as for cigarettes.
1604 *Cotton fabrics*	
1913	Total output times share of small-scale industry (assumed to be the same as in 1927/28).
1927/28	Total output minus large-scale output.
1933	Small-scale production negligible (*24*, 42).
1607 *Linen fabrics*	
1913, 1927/28	Total output times share of small-scale industry (15% and 2%, *78*, Part 4, Appendix on Small-Scale Industry).
1933	Small-scale production negligible (*24*, 42).
1609.1 *Pure silk fabrics*	
1913, 1927/28, 1933	Total output (*48*, Appendix Table B-2, series 1609.1) times share of small-scale industry (24%, 32%, and 1%, *78*, Part 4, Appendix on Small-Scale Industry).
1611 *Woolen and worsted fabrics*	
1913, 1933	Total output times share of small-scale industry (for 1913 assumed same as for 1927/28; for 1933 14%, *78*, Part 4, Appendix on Small-Scale Industry).
1927/28	Total output minus large-scale output.
1614 *Felt footwear*	
1913, 1933	Total output times share of small-scale industry (for 1913 86%, *78*, Part 4, Appendix on Small-Scale Industry; for 1933 20%, *24*, 42).
1927/28	Assumed same as in 1928/29 (11.2 mill pairs, *69*, 1930, 5–6).

TABLE A-5

OUTPUT OF ADDITIONAL SMALL-SCALE INDUSTRIES: SOVIET UNION, 1913, 1927/28, AND 1933

Code	Product	Unit	1913	1927/28	
509	Industrial timber hauled	mill. m.^{3}	75.0	60.1	—
1508	Soap (40%)	th.m.t.	38	54	29
1601	Boots and shoes	mill. pairs	56.4	79.4	10.8

SOURCE

509 *Industrial timber hauled*	
1913, 1927/28	Total output assumed to be small-scale.
1933	Small-scale production negligible (*24*, 44).
1508 *Soap (40%)*	
1913, 1927/28, 1933	Total output times share of small-scale industry (1913 assumed to be same as 1927/28; 1927/28 and 1933 15% and 11%, *78*, Part 4, Appendix on Small-Scale Industry).
1601 *Boots and shoes*	
1913, 1933	Total output times share of small-scale industry (1913 94%, *17*, 16; 1933 12%, *78*, Part 4, Appendix on Small-Scale Industry).
1927/28	Total output minus large-scale output.

Appendix

TABLE A-6

INDEX FOR INDUSTRIAL MATERIALS, LARGE- AND SMALL-SCALE INDUSTRY: SOVIET UNION, 1913, 1927/28, AND 1933

(million constant rubles, 1928 prices)

		1913			*1927/28*			*1933*		
Code	*Product*	Large-Scale (1)	Small-Scale (2)	Total (3)	Large-Scale (1)	Small-Scale (2)	Total (3)	Large-Scale (1)	Small-Scale (2)	Total (3)
103	Steel ingots and castings	489.9	—	489.9	492.3	—	492.3	797.7	—	797.7
202	Copper	30.0	—	30.9	29.9	—	29.9	44.1	—	44.1
203	Lead	1.0	—	1.0	1.6	—	1.6	9.2	—	9.2
204	Zinc	2.1	—	2.1	1.6	—	1.6	11.6	—	11.6
301.1	Hydroelectric power	1.7	—	1.7	20.9	—	20.9	60.7	—	60.7
302	Anthracite	51.6	—	51.6	86.4	—	86.4	223.9	—	223.9
303	Bituminous coal	227.5	—	227.5	239.6	—	239.6	458.1	—	458.1
304	Lignite	7.8	—	7.8	21.1	—	21.1	61.2	—	61.2
305	Crude petroleum	264.9	—	264.9	333.8	—	333.8	616.8	—	616.8
306	Natural gas	1.7	—	1.7	17.6	—	17.6	61.8	—	61.8
307	Oil shale	—	—	—	—	—	—	1.0	—	1.0
308	Peat	14.9	—	14.9	46.8	—	46.8	121.9	—	121.9
309	Firewood (consumption)	190.4	379.6	570.0	146.5	303.8	450.3	429.2	180.7	609.9
401	Soda ash	11.7	—	11.7	15.9	—	15.9	24.1	—	24.1
404	Sulfuric acid	12.3	—	12.3	21.5	—	21.5	63.9	—	63.9
405.1	Phosphoric fertilizer	1.9	—	1.9	4.5	—	4.5	21.7	—	21.7
405.2	Ammonium sulfate	1.4	—	1.4	1.1	—	1.1	11.1	—	11.1
405.3	Potash fertilizer	—	—	—	—	—	—	2.9	—	2.9
406	Ground natural phosphate	0.1	—	0.1	0.2	—	0.2	4.0	—	4.0
410	Red lead	2.0	—	2.0	3.8	0.7	4.5	2.1	0.2	2.3
416	Paper	87.5	—	87.5	126.3	—	126.3	224.7	—	224.7
417	Paperboard	5.5	—	5.5	13.0	—	13.0	21.7	—	21.7
418	Motor vehicle tires	1.6	—	1.6	7.1	—	7.1	56.4	—	56.4
501	Red bricks	81.4	46.9	128.3	71.7	29.2	100.9	112.4	15.4	127.8
505	Sand-lime, silica, and slag bricks	4.7	—	4.7	5.1	—	5.1	17.4	—	17.4
506	Cement	50.2	—	50.2	61.1	—	61.1	89.4	—	89.4
507	Construction gypsum	3.1	2.6	5.7	1.4	1.2	2.6	4.9	0.2	5.1
508	Construction lime	4.3	3.6	7.9	4.4	3.7	8.1	21.5	1.1	22.6
510	Lumber	217.4	193.0	400.4	217.4	183.0	400.4	766.5	14.3	780.8
511	Plywood	13.2	3.9	17.1	21.7	4.0	25.7	56.0	—	56.0
512	Magnesite metallurgical powder	6.0	—	6.0	10.0	—	10.0	24.7	—	24.7
513	Roll roofing	3.1	—	3.1	6.8	—	6.8	31.7	—	31.7
516	Asbestos shingles	1.3	—	1.3	5.7	—	5.7	9.0	—	9.0
519	Window glass	61.5	1.3	62.8	88.7	1.9	90.6	79.0	—	79.0
1501	Flour [a]	202.4	394.0	596.4	174.7	336.5	511.2	153.4	272.6	426.0
1503	Butter [a]	—	44.6	44.6	—	35.2	35.2	38.4	14.9	53.3
1504	Vegetable oil [a]	31.7	24.8	56.5	33.8	40.6	74.4	36.0	2.5	38.5
1506	Meat [a]	—	107.3	107.3	26.2	43.6	69.8	43.2	0.8	44.0
1507	Fish catch	—	294.2	294.2	—	242.8	242.8	372.8	3.8	376.6
1509	Salt	14.1	—	14.1	16.8	—	16.8	19.7	—	19.7
1510	Raw sugar [a]	247.8	—	247.8	236.1	—	236.1	183.1	—	183.1
1511	Starch and syrup [a]	11.9	3.1	15.0	7.2	2.8	10.0	14.8	0.9	15.7
1513	Canned food	5.3	0.1	5.4	5.7	1.4	7.1	34.9	—	34.9
1514	Beer [a]	108.1	—	108.1	52.4	—	52.4	57.8	—	57.8
1515	Cigarettes [a]	27.3	1.4	28.7	61.2	3.1	64.3	81.5	—	81.5
1516	Low-grade tobacco [a]	10.1	3.7	13.8	11.0	4.0	15.0	8.8	—	8.8
601	Crude alcohol [a]	70.5	—	70.5	35.2	—	35.2	58.6	—	58.6
1604	Cotton fabrics [a]	850.9	45.1	896.0	880.7	48.6	929.3	948.0	—	948.0
1607	Linen fabrics [a]	67.5	11.9	79.4	113.2	2.3	115.5	93.0	—	93.0
1609	Silk and synthetic fabrics [a]	129.2	26.8 [b]	156.0	39.6	2.4	42.0	77.6	0.4	78.0
1611	Woolen and worsted fabrics [a]	161.5	33.3	194.8	154.1	62.9	217.0	137.3	22.4	159.7
1614	Felt footwear [a]	11.4	71.8	83.2	22.9	58.2	81.1	31.7	7.8	39.5
604	Hard leather [a]	13.7	3.8	17.5	47.8	18.9	66.7	29.2	0.6	29.8
605	Soft leather [a]	24.2	6.8	31.0	58.7	23.6	82.3	65.8	1.3	67.1
	Total	3,842.2	1,693.6	5,535.8	4,102.8	1,454.4	5,557.2	7,027.9	539.9	7,567.8
	Total excl. flour	3,639.8	1,299.6	4,939.4	3,928.1	1,117.9	5,046.0	6,874.5	267.3	7,141.8

Notes to Table A-6

[a] "Net" price used.

[b] Small-scale output of pure silk fabrics from Table A-4 (no synthetic fabrics produced by small-scale industry) multiplied by "net" price of pure silk fabrics (4 rubles/m., assumed to be 80% of gross price). Gross price, 5 rubles/m., derived from avg. 1913 price of pure silk fabrics, pile goods, and piece goods (*68*, 1933, 2) and price index for silk fabrics (1927/28 = 251, 1913 = 100, in *11*, 1928, Sept., 23).

Source

Col. 1: Col. 3 minus col. 2.

Col. 2: Output of small-scale industry (Table A-[illegible]) multiplied by gross price unless otherwise noted (for prices, see *48*, Table D-8). When small-scale output not available, it was assumed negligible or nonexistent.

Col. 3: Output of total industry (*48*, Table B-2) multiplied by price, as in col. 2.

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